CERAMICS, MOLLUSCS, AND SEDENTISM: THE LATE ARCHAIC PERIOD ON THE GEORGIA COAST

By

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PREFACE

This dissertation is a study in the application of hypothesis formulation and testing to archaeological investigation of an early prehistoric aboriginal culture. It is presented chronologically in order to document the considerations and observations in perspective. To do otherwise would create an artificial impression of smoothness and correctness that is not real. Further, this study is seen as an exploration of the application of more systematic methodological techniques in field excavation. Analysis of data thus collected to an long-standing problem in southeastern United States prehistory generates very interesting results. Finally, it is intended to be a contribution to the status of knowledge on the subject of southeastern shell ring sites. To this point, it is a compilation of data presently available in the archaeological literature as well as a presentation of data resulting from field excavations on Cannon's Point, St. Simon's Island, Glynn County, Georgia. It is believed that such data be used for comparative purposes by investigators considering the same or similar problems.

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Abstract of Dissertation Presented to the Graduate Council
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Chairman: Charles H. Fairbanks
Major Department: Anthropology

Previous researchers have contended that during the Late Archaic Period (circa 2500-1000 BC), human groups on the present-day coast of South Carolina and Georgia practiced a mollusc-centered subsistence strategy. The abundance of molluscan resources has been viewed as evidence of a relatively permanent residence pattern. This stable pattern of residence was thought to have been instrumental in the innovation of fired clay pottery. Today these former habitation sites exist as annular rings and amorphous middens of molluscan debris.

Recent archaeological investigations on Cannon's Point, St. Simon's Island, Georgia, in such habitation sites indicate that although molluscan resources were obviously an important contributor to prehistoric subsistence, crustaceans and vertebrate fauna (particularly fishes) also were critical nutritional supplements.

Fiber-tempered ceramics, to date the earliest type of earthenware reported in the United States, are present in all of the Late Archaic Period sites excavated. Affiliations between Georgia fiber-tempered ceramic decorative motifs and motifs associated with Orange pottery from the St. John's River drainage in Florida are noted. This finding supports the previous observation of Holder and others for the St. Simon's Island area. The Georgia coastal ceramic tradition is considered influential in the development of Orange ceramics.

Reconsideration of the generally accepted belief that decorated fiber-tempered ceramics are later than plain ceramics is urged based on the findings from the excavation of two shell ring sites (dated by radiocarbon at 2240-1815 BC and 1910-1665 BC). Decorated ceramics occur in these sites at all levels, dating coevally with plain specimens. Reconsideration is also urged for Waring's contention that the Bilbo-style engraved bone pins are a stylistic development. Both of the two bone pin fragments recovered in the Cannon's Point excavations were from a sub-shell stratum.

In the marsh surrounding the largest ring site, a cultural deposit was exposed 0.5-1.0 meter beneath the present surface. The association of cultural materials (ceramics, worked bone, lithics, flora, and fauna) with tree stumps suggested that environmental change is evidenced in the immediate vicinity of the ring sites. When deposited, the Marsh Ring accumulated in a forest environment. Ceramics from this cultural deposit are both fiber-tempered and grit-tempered; however, the manner in which deposition occurred is unclear. Radiocarbon dates indicate that environmental change in this area occurred after 835-820 BC.

Permanence of residential pattern cannot be fully evaluated at present. Evidence suggesting a Spring-Fall occupation of the Cannon's Point sites

is considered tenuous at this time. Investigation of inland riverine sites having fiber-tempered ceramics is needed to evaluate the relationship of these biotopes to the coast.

Excavations in the Cannon's Point shell ring sites have demonstrated that more systematic methods and techniques must be applied to data recovery. Perceptions of coastal cultural developments have been framed in terms of cultural inventory and artifact attributes. Development of a research strategy to investigate the articulation between human culture and physical environment is urged to provide an understanding of cultural events during the Late Archaic Period.

CHAPTER I

SHELL RINGS in SOUTHEASTERN UNITED STATES ARCHAEOLOGY

Introduction

For thousands of years prior to the founding of European colonies in the New World, native American populations experienced remarkable variety in cultural complexity, geographical distribution, and in their use of environmental resources. Today archaeological sites are monuments to this diversity of prehistoric lifestyles. Just as the strangeness of such people and places promted early Europeans to attribute unusual origins and abilities to native peoples, the intricacies and apparent inexplicabilities of human cultural remains still encourage some to speculate novel derivations of human artifacts. It has been the task of archaeology to attempt to demonstrate causality in the adaptability and flexibility of mankind. To the student of prehistory change is perhaps the most obvious fact and the one most challenging to explain. Plog (1974:8) considers explanation of change to be the primary undertaking of productive archaeological research. The methodology employed in explanation is a critical issue in archaeology today for it is not sufficient to simply " ... tie data to cultural phenomena ..." (Plog 1974:4). Recovering significant archaeological data from field research strategies having the objectives of hypothesis formulation and testing affords the opportunity to investigate parameters germain to explication and explanation of cultural processes (Binford 1962; Watson, LeBlanc, and Redman 1971). As a result of these objectives, contribution to the corpus of

anthropological knowledge may be achieved.

The present study demonstrates the use of archaeological data to explain cultural phenomena. It proceeds from a review of the pertinent archaeological literature to recognition of specific needs and problems requiring further study within the research area. Hypotheses are generated for field testing using excavation techniques selected to maximize data recovery. Hypotheses, it should be noted, do not spring forth at the need of the investigator. Rather, they are usually the result of continuing research. In this study, it should be made clear that the status of information regarding the research topic was not sufficient enough to support more than very general hypotheses at the outset. As excavation and more importantly analysis progressed, data suggested direction for inquiry. Hypotheses were generated to structure excavation strategy and future analysis. Working hypotheses will be explicitly stated in Chapter 2 and 3.

The University of Florida St. Simon's Island Archaeological Project

Dr. Charles H. Fairbanks and Dr. Jerald T. Milanich of the University of Florida Department of Anthropology were approached in 1972 by Sea Island Properties, Inc., regarding a proposed archaeological survey of Cannon's Point, St. Simon's Island, Glynn County, Georgia. Several sites of known archaeological interest were in areas scheduled for development promting the landowners' concern for recovery and preservation of prehistoric and historic materials. Ruins of the Couper Plantation were listed in the National Register of Historic Palces. Excavations in the extensive shell heaps on the property had been made by Preston A. Holder during the late 1930's. Human skeletal remains were frequently exposed in plowed fields. A shell ring site was identified by a site survey team in 1972.

A grant (#GB-37889) to support excavations was awarded by the National Science Foundation (Fairbanks and Milanich) in 1973. Field research began in that year. Investigation of the changing relationships between man and his environment during the period 2000 BC and AD 1865 was the organizational theme of the project. The presentation and discussion which follows concerns the Late Archaic aspect of the project (circa 2000-1000 BC). Field research and analysis were also supported by funds from the Sea Island Foundation.

Southeastern Shell Ring Sites

Structures of unusual size, location, composition, or configuration have been popular subjects for study and speculation: pyramids, henges, and earthen effigy mounds are but a few examples. Accounts of early travelers, proceedings of learned academies, and personal letters document the interest in such sites. William McKinley of Milledgeville, Georgia, wrote of circular shell heaps on Sapelo Island, Georgia, in 1872. His letter to the Smithsonian Institution is included in the Annual Report for that year (McKinley 1873: 422-428). Apparently this is the first mention of a shell ring site. The first excavations at Sapelo were some twenty years later. Clarence B. Moore and field party conducted excavations within the largest shell enclosure (1897: 71-73). As a result of Moore's coastal investigations, two other shell ring sites were reported (1899). However, because large quantities of artifacts were not forthcoming, Moore's group shied away from further excavations in ring sites. Fifty years later, the first scientific investigation of a shell ring was headed by Antonio J. Waring, Jr., in the largest Sapelo Island ring (Waring and Larson 1968: 263-278).

Circular accumulations of shell dot the barrier islands along the

coast of South Carolina and Georgia. Shell ring sites are located on the first barrier island, or as is more commonly the case, on islands in the lagoon and estuaries between the initial barrier and the mainland. Ring sites are frequently located in salt marsh environments. At this time, known distribution is limited to the states of South Carolina and Georgia. South Carolina reports twenty-two; Georgia has at least half that many. Table 1 summarizes published distributional information. It is possible that two additional shell ring sites exist in Florida (Talbot Island, Jupiter Island). The cultural inventories of these sites do not exhibit any similarity to Georgia and South Carolina sites. Oysters (Crassostrea virginica) are the most abundant constituents, but other species are present, particularly clam (Mercenaria sp.) whelk (Busycon carica), and ribbed mussel (Geukeysia demissa). While most species are estuarine, several terrestrial forms are observed. In addition to molluscs, sediment, vertebrate remains and human cultural materials are present.

Dimensions of the shell rings are extremely variable (Table 2). In general, diameter ranges from 37 to 46 meters. Height also varies considerably, a result to some extent of time and weathering. All measurements are given in metric. While a few rings have a complete circular contour, most are incomplete in some aspect. Erosion, shell borrowing, and initial construction design may account for this.

Speculations regarding ring function began with McKinley's (1873) suggestion of use for games, ceremonials, or torture. Since that time, additional hypotheses have been offered. Moore (1897), as another possible explanation, considered fortifications. Waring and Larson concluded that the Sapelo Island rings were public in nature and

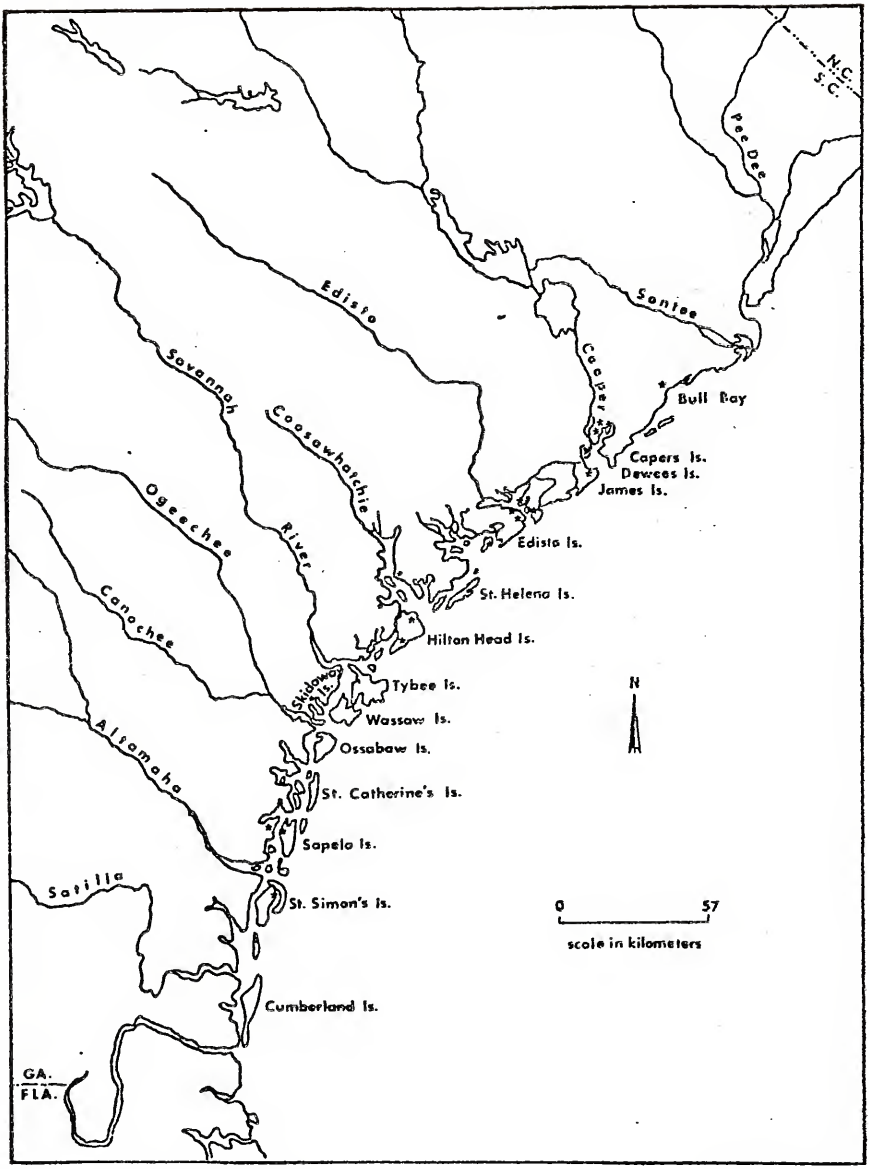


FIGURE 1. Shell Ring Site Distribution.

Table 1: Site Distribution, South Carolina and Georgia

Site	Designation	Location	Source
		South Carolina	
Sewee	38CN45	Bull Bay	Edwards 1965
Stratton Place	38CH24	Leeward of Capers Island	Hemmings and Waddell n.d.
Buzzards Island	38CH23	Leeward of Capers Island	Hemmings and Waddell n.d.
Crows Island	38CH60	Leeward of Capers Island	Hemmings Field Map
Yough Hall (Auld)	38CH41	Leeward of Dewees Island	Crane and Griffin 1964:9-10
Hobcaw	38CH46	Charleston	Hemmings and Waddell n.d.
Lighthouse Point	38CH12	James Island	Hemmings and Waddell n.d.
Hanckel Mound	38CH7	Wadmalaw Island	Hemmings and Waddell n.d.
Horse Island	38CH14	Leeward of Seabrook Island	Hemmings and Waddell n.d.
Fig Island 1	38CH42	Edisto Island	Hemmings Field Map
Fig Island 2	38CH42	Edisto Island	Hemmings 1970a, 1970b
Fig Island 3	38CH42	Edisto Island	Hemmings 1970a
Murrays Island	38CH61	Edisto Island	Hemmings Field Map
Chester Field	38BU29	Port Royal Island	Flannery 1943:147-153 Griffin 1943:159-167
Guerard Point	38BU21	Okatee River	Hemmings and Waddell n.d.

Table 1 - Continued.

Site	Designation	Location	Source
		South Carolina	
Large Ford Ring	38BU8	Hilton Head Island, north	Calmes 1968:45-48
Small Ford Ring	38BU8	Hilton Head Island, north	Calmes 1968:45-48
Sea Pines Ring	38BU7	Hilton Head Island, south	Calmes 1968:45-48
		Georgia	
Pagelson Ring	9CH115	Skidaway Island	DePratter n.d.
South Ring	9CH77	Skidaway Island	DePratter n.d.
Ring near Skidaway	9CH111	Skidaway Island	DePratter n.d.
Oemler (North)	9CH14	Savannah	Waring 1940:182
Sapelo Ring 1	9Mc123	Sapelo Island	Moore 1897
Sapelo Ring 2	9Mc123	Sapelo Island	Waring and Larson 1955-60
Sapelo Ring 3	9Mc123	Sapelo Island	
A. Busch Krick	9Mc187	Creighton Island	Crusoe and DePratter n.d.
Bony Hammock	9GN53	St. Simon's Island	DePratter n.d.
Ring at Cannon's Pt.	9GN57	St. Simon's Island	Marrinan 1973
West Ring	9GN76	St. Simon's Island	Marrinan 1975

Table 2: Shell Ring Dimensions (in meters)

Site	Diameter	Height	Base Width	Approximate Surface Area Excavated	Source
Fig Island	76	.9-1.5	9-12	76.7 m^2	Hemmings 1970
Chester Field		.9-1.5	7.6	24.18 m^2	Flannery 1943
Large Ford	61	1.8	15		Calmes 1968
Small Ford	61	0.6	15		Calmes 1968
Sapelo 1	73	3	9	108.7 m^2	McKinley 1873
Sapelo 2	64	.9	6		
Sapelo 3	46				
A. Busch Krick	38	1.2-2.1		7.53 m^2	DePratter n.d.
Bony Hammock	30	1.5-2.1		1.67 m^2	DePratter n.d.
Cannon's Point	49	1.3-1.75	11.5	49 m^2	Marrinan
West Ring	42	0.65-0.45	12	8 m^2	Marrinan
Skidaway South	46-53	3-5			DePratter n.d.
Pagelsen Ring	28	.3			DePratter n.d.
Ring near Skidaway	15x27	1.5			DePratter n.d.
Oemler North		1.2-1.5 (west) .3-.6 (east)	3-9		DePratter n.d.

represented some " ... ceremonial or social arrangement ... " (1955-60: 273). After excavations in the Sewee Mound ring in South Carolina, Edwards concluded that the site represented the remains of an aboriginal fishtrap (1965). Refuse debris from internal pile dwellings is another suggestion (Caldwell as quoted in Crusoe 1973). Unpublished sources have contended that these sites were supports for structures built directly on the midden accumulation or protection fot dwellings located within.

It should be mentioned at the outset that some argument exists regarding ring origin as being of natural construction rather than human. Proponents of the natural origin view contend that redeposition of naturally occurring oyster bars and human cultural debris by storms and currents is responsible. Clarence B. Moore was convinced of their human origin but interested himself in determining them to be aboriginal rather than English. This study suggests human construction responsible for ring sites. Data supporting this contention will be presented in Chapter 3.

Previous Investigations and Interpretations

An examination of the results of four shell ring site excavations is made at this point since information from these sites comprises the foundation for existing interpretations of prehistory during the Late Archaic. The relevant sites are Sapelo Island Ring Number 1 (Waring and Larson 1955-60 263-278), Sewee Mound (Edwards 1965), Hilton Head Island Rings (Calmes 1968), and Fig Island (Hemmings 1970a, 1970b). Because the following comments are general considerations, the reader is referred to Appendix 1 for a detailed summary of information available for these sites.

Previous excavation strategy followed two basic approaches. Waring and Larson and Hemmings excavated 10-foot wide trenches from approximate ring center through the shell deposit to the exterior edge. Edwards and Calmes selected a smaller sampling size (5-foot square units) and tested more locations within the site.

Excavation techniques varied significantly. No use of screens is reported by Waring and Larson or Calmes. Hemmings used 1/4-inch screen as a standard at Fig Island and relied on window screen for separating material recovered from features. After observing the quantities of faunal material lost through 1/4-inch screen, Edwards changed to 1/8 inch. Additionally, he used water separation in the screening process.

Location of sites presented some logistical problems for investigators. Hemmings and Edwards experienced tidal innundation during excavation because of low elevation above sea level. The higher elevation of the Sapelo Island sites precluded such problems with tidal water or elevated ground water levels during excavation.

Reporting of information is sketchy. Waring and Larson's (1955-60: 263-278). report appears in The Waring Papers, published in 1968. Until a few years ago, this report was considered a rather thorough job. In comparison with more recent archaeological research, it lacks information on many relevant questions. Calmes (1968) brief paper comprises the total published information on the Hilton Head Island sites. Oriented toward establishing chronological placement of the sites on the basis of ceramics, it offers very little else. Edwards' (1965) report is entitled "preliminary." No further analysis has been made public. Information on Hemmings' Fig Island excavations are contained in two papers dealing very generally with that site. Faunal information for

this site is available from the Zooarchaeology Laboratory, Florida State Museum. The Institute of Archaeology and Anthropology of the University of South Carolina has graciously made their copies of Hemmings' artifact analyses available.

Data are variously interpreted. The following discussion summarizes interpretations of excavators and other southeastern prehistorians. The origins of human inhabitants of the coastal area during this time period (circa 2500-1000 BC) are obscured by the fact that there is no solid evidence for an inland-coastal cultural continuum. Sites dating within the time span circa 4000-2000 BC are absent in the coastal plain. Waring (1940:191) posits an inland cultural development for coastal peoples based on lithic technology. Since no lithic material is naturally available in the coastal strand, Waring and lately Crusoe and DePratter (n.d.:15), agree that previous cultural development in an inland area is probable. The extensive shell heaps in the states of Tennessee, Kentucky, and Nothern Alabama are offered as examples of possible sources of a cultural tradition that later adapted to the lower Atlantic coast (Stoltman 1972:53). Basic similarities in riverine and coastal subsistence are also offered as further substantiation of the riverine origins of these peoples. Riverine mollusc gatherers are believed to have made the adjustment of estuarine mollusc procurement while fishing and hunting techniques required only slight reorientation to the new environment.

Analysis of the cultural remains rests on three important artifact classes: pottery, projectile points, and worked bone. Shell tools, a common component of cultural inventories in coastal sites are not distinctive enough for the purposes of tracing cultural affiliations.

Ceramics appear early in this geographical area and are very distinctive In the United States, ceramics initially occur in the southeast and are dated at circa 2500 BC (Stoltman 1966:872). These ceramics are fiber-tempered; a typological distinction based on the inclusion of vegetal material as a tempering agent. A plain ceramic horizon preceded decorated ceramic types (Waring and Larson 1955-60; Hemmings 1970b; Milanich 1971). Evidence for this progression is observed at Bilbo, Sapelo Island, and Stallings Island (located at the Fall Line on the Savannah River near Augusta, Georgia). Ceramics are variously termed: Stallings, Bilbo, St. Simons. It should be noted here that the type site for fiber-tempered ceramics is the Stallings Island site (Claflin 1931). It is riverine in orientation. Subsequent reports of fiber-tempered ceramics in Georgia and South Carolina were lumped under the Stallings nomen. Decorative types included incision, punctation, combinations of these techniques, and drag and jab (frequently called linear punctation). Ceramics are apparently hand-molded as no evidence of coil fracturing is observed.

In South Carolina, ceramics are primarily sand-tempered and typed Awendaw, Horse Island, or Thoms Creek (DePratter, Jefferies, and Pearson 1974). Radiocarbon dates indicate that sand-tempered and fiber-tempered ceramics are at least partially contemporary in occurrence with the latter occurring first. It is possible that Awendaw and Horse Island are coastal variants of the Thoms Creek type which is identified for inland contexts. Ceramic types overlap geographically. Fiber-tempered types are reported from as far north as the Edisto River drainage in South Carolina. Sand-tempered types are reported along the Savannah River drainage from the coast inland.

Lithic artifacts associated with fiber-tempered ceramic sites (rings and middens) are large, triangular stemmed projectile points usually

termed Savannah River Stemmed. It has been noted that recovery of any quantity of lithic material from ring sites is not usual. These sites are especially non-productive of lithic debris and worked examples. Bilbo, a non-ring midden site located near Savannah, Georgia, yielded large quantities of lithic artifacts (Waring 1940: 152-197). It is contended that this feature is unusual in the coastal area (Crusoe and DePratter n.d.; Marrinan 1973).

Bone tools include both crude and sophisticated workmanship. Some forms are consistent and stylized enough to be described and given type names. The long bones of deer were fashioned into several types of artifacts, but the most distinctive one is the Bilbo-style bone pin described by Waring (1940: 165-171). This artifact is made from a split section of the deer metapodial and frequently retains a portion of the proximal articular surface. Incised designs are occasionally present on the surface. Geometric motifs are the usual decoration; naturalistic designs are unknown. Waring contends that the style changes from a "nail-head type" to an "expanded-headed type" (1940-42: 254). Thus the latter pin style indicated a later chronological placement to Waring (1940-42: 254).

Chronological Assessment

Radiocarbon dates for fiber-tempered sites (both ring and midden) fall within a 2500-1000 BC time range. This period has been termed Stallings, St. Simon's, Bilbo, Sapelo-St. Simon's, and Fiber-tempered. Chronological designations are categorical conventions used to organize information, artifacts, and sometimes intuition. Using such a structure, prehistory is examined and interpreted. At times, these exercises become particularly cumbersome as the chronological dilemma of fiber-tempered sites aptly exemplifies.

Understanding Late Archaic cultural developments on the Georgia coast is complicated by the assignment of several typological names derived from distinct geographical locales (e.g. Stallings, Bilbo, St. Simon's). There is a lack of concensus regarding just what criteria should be used in developing these designations: artifacts or adaptations. There is also a tendency to use attributes of a single artifact as the basis for developing typological levels.

Waring (1940: 160) observed that Stallings nomen cannot be applied to the coastal sites since there were too many dissimilarities. These observed differences were ceramic: vessel shape and thickness, execution of a punctated design, presence of crude simple stamping on vessel bottoms (1940: 160). He proposed a bipartite Bilbo nomen: Bilbo I with plain fiber-tempered ceramics and Bilbo II with decorated fiber-tempered ceramics and elaborately decorated bone pins. Williams (1968: 320-321) presented a Stallings Island Culture composed of a Stallings Island Phase, a Bilbo Phase, and a St. Simon's Phase. This structuring encompasses the geographical aspect but considers little else.

Milanich (1971: 119-128) expressed dissatisfaction with the equating of Stallings Island and the coastal cultural traditions. He developed a bipartite division for the coast: Sapelo Phase and St. Simon's Phase. The Sapelo Phase is associated with shell ring sites but temporally overlaps the midden-related St. Simon's Phase. These phases mark the beginning of what Milanich called the "Coastal Tradition" and are based on radiocarbon dates, differences in subsistence orientation, distinct settlement types, and artifact inventories. Crusoe (n.d.: 4-10) presented a four-part division (Stallings 1-4) articulating the Georgia area with Bullen's

(1954: 47) Orange chronology for Florida. The criteria for these divisions are primarily changes in manufacture and decoration of fiber-tempered ceramics. It is rather obvious that no concensus exists. Table 3 summarizes the different chronologies.

The Cultural Phenomena

At this point, it is pertinent to summarize the cultural phenomena peculiar to the coast as exemplified by fiber-tempered ceramic sites in general and shell ring sites in particular. The explication and explanation of these cultural developments are the tasks to which this study is addressed.

A. Reliance on molluscs is the most obvious characteristic. This subsistence strategy is held responsible for influencing settlement pattern and allowing more sedentary existence. Lengthy settlements are inferred from the extensive and deep deposits. Habitation areas during the time period *circa* 2500-1000 BC are of two types: ring and amorphous midden. Both are primarily composed of shellfish refuse. Some researchers consider coastal inhabitants derived from inland riverine shellfish gatherers (e.g. Tennessee River Valley Archaic people).

B. Ceramics first appear in the United States at this time. The inclusion of ceramics in a site inventory once lent credence to claims of sedentism (as well as horticulture). A nomadic existence was said to be ruled out by the problems of transporting ceramics. In Georgia and extending to the Edisto River drainage of South Carolina, fiber-tempered ceramic types are recovered. For the remainder of the area of distribution of shell ring sites (to the Santee River in South Carolina) and with some overlapping at the coast and inland in the Savannah River drainage, sand-tempered types occur.

C. Cultural inventories are sparse and quantities of recovered artifacts vary with location. There is also some suggestion that inventories

Table 3: Chronological Summary.

	Waring	Williams	Milanich	Crusoe
NAME	Bilbo Period Bilbo I Bilbo II	Stallings Culture Stallings Is. Phase Bilbo Phase St. Simon's Phase	Coastal Tradition Sapelo Phase St. Simon's Phase	Stallings Period Stallings I-IV
APPLICATION	Inland and coastal sites	Stallings Is. Phase Stallings Is. and nearby inland sites Bilbo Phase coastal Savannah River area St. Simon's Phase McIntosh and Glynn counties	coastal sites	coastal and inland sites for duration of fiber-tempered ceramics
CRITERIA	Bilbo Period duration of fiber-tempered ceramics Bilbo I plain fiber-tempered ceramics plain or simply decorated nail head bone pins baked clay objs. large, stemmed equilateral triangular projectile points	Not developed	Sapelo Phase Georgia and South Carolina ring sites St. Simon's Phase Coastal Georgia non-ring fiber-tempered ceramic sites	Stallings I -absence of decoration II -punctated and incised decoration III-grooved designs and rims introduced IV -pottery began to be made with other tempering agents

Table 3 - Continued.

	Waring	Williams	Milanich	Crusoe
CRITERIA	Bilbo II decorated fiber-tempered ceramics expanded head elaborately decorated bone pins			
DATES			2000-1000BC Sapelo 1000-500 BC St. Simon's Phase	I 2500-1800 BC II 1800-1500 BC III 1500-1200 BC IV 1200-100 BC
SOURCE	Waring 1968:254	Williams 1968:320-1	Milanich 1973:51-53 1971:119-28	Crusoe n.d.:4-10

vary with type of site (i.e. middens may be more productive than ring sites). Sites nearer the Savannah River contain more lithic material. Bone pins are a very important diagnostic artifact but their function is uncertain. Cultural inventories are composed of subsistence-oriented items made of locally available materials.

D. At approximately 1000 BC there is an end to this lifestyle. Molluscs decline in subsistence importance, new ceramic types utilizing different construction and tempering techniques appear, and cultural inventories change.

This then was the cultural problem to be archaeologically investigated and interpreted. A better explanation of the particular adaptation made by the occupants of the coastal area was obviously a very real need considering both the data base available for archaeological interpretaion as well as the interpretations generated.

CHAPTER 2

EXCAVATIONS ON CANNON'S POINT - PART 1: SUMMER 1973, SPRING 1974

Present Environment

The Atlantic mainland is protected by barrier islands along the majority of its extent. These islands are characteristically elongated in contour and result from deposition of water- and wind-borne sediments. Width is usually limited to several kilometers, but length may exceed 160 kilometers. St. Simon's Island is one of the southern barrier islands along the Georgia coast. Located between Sapelo and Jekyll Islands, it is approximately 57 kilometers from the Georgia-Florida border (Fig. 2).

The northern end of St. Simon's Island is divided into two points of land: Butler Point on the west and Cannon's Point on the east (Fig. 3). These points are separated by an expanse of salt marsh through which Jones Creek meanders. The archaeological project area comprises the entire eastern point. To the north, the area is bounded by the Hampton River; on the south by a property line fronting on Lawrence Road. Little St. Simon's Island forms a protective barrier to the north against the Altamaha River and against the Atlantic Ocean on the east. Consequently, the Cannon's Point area is sufficiently distant (3.8 km) from the first barrier that vegetational wind forms produced by increased salt content in the atmosphere are observed only in a very marginal fringe along the marsh edge.

Extensive changes in the floral cover of Cannon's Point have been affected since the Plantation Period by land clearing for cultivation of commercial and staple crops and by free ranging cattle and pigs. In a

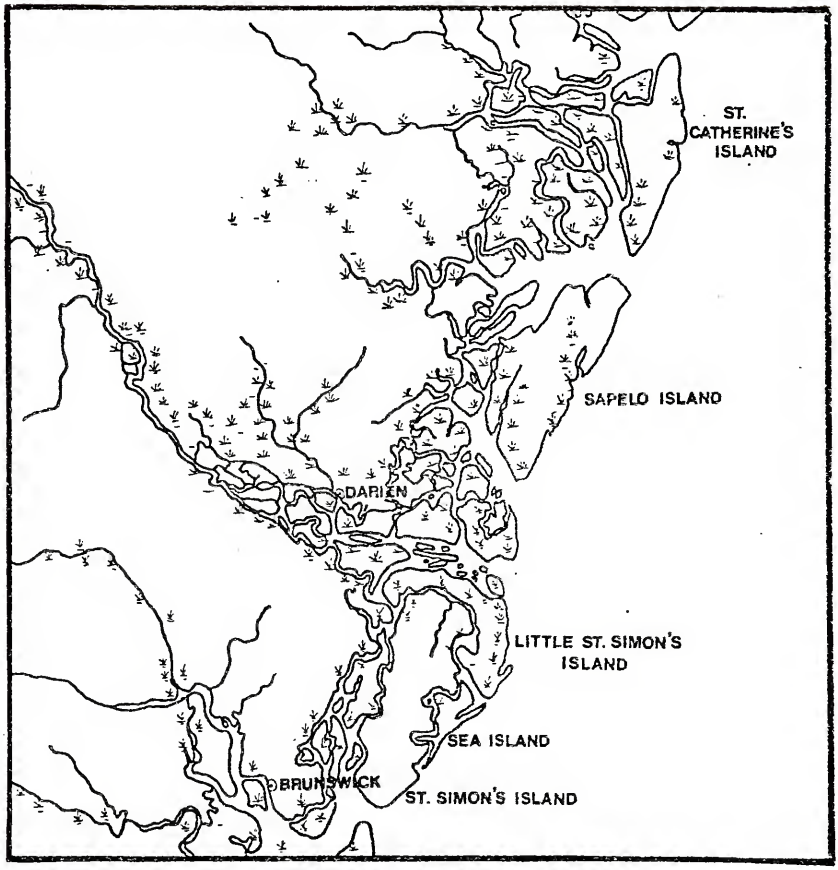


FIGURE 2. St. Simon's Island and Adjacent Islands.

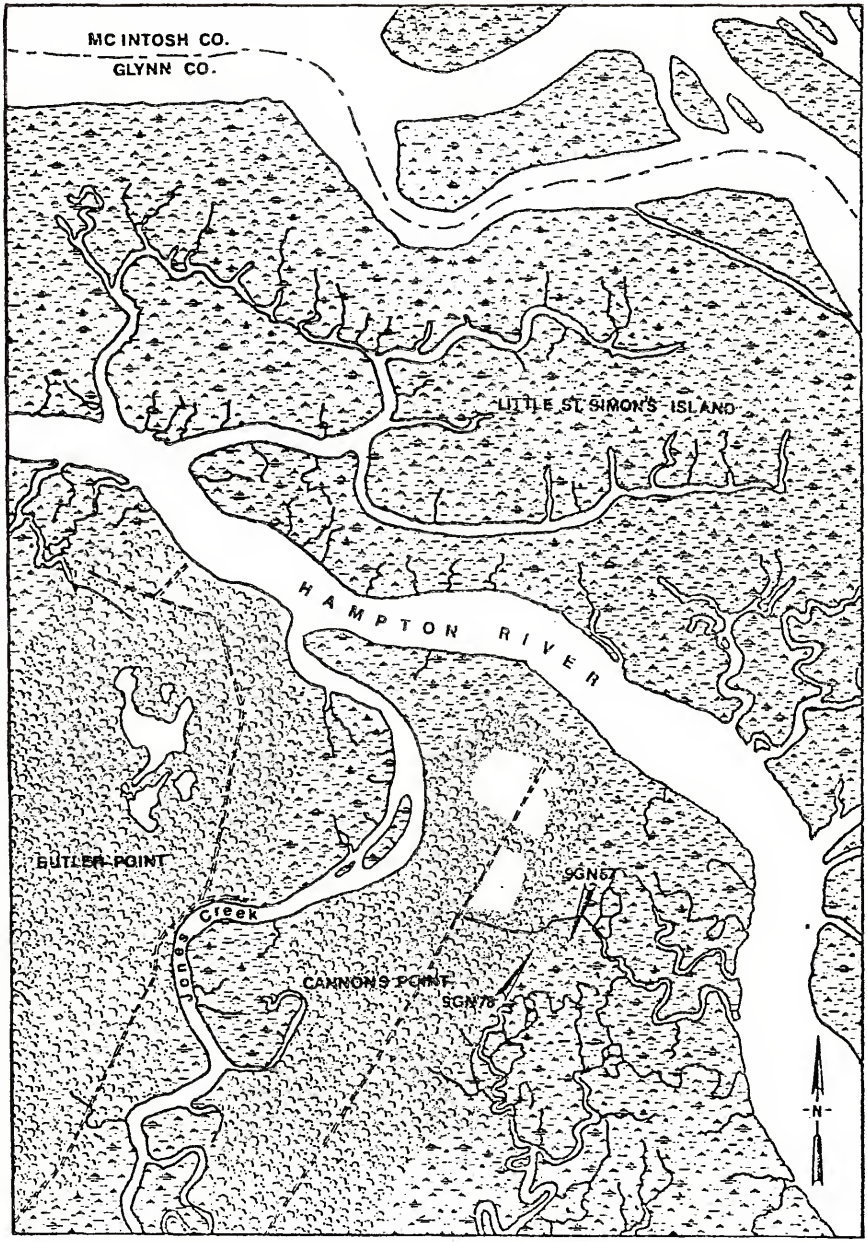


FIGURE 3. The Cannon's Point Project Area.

very limited way, this practice is continued today. During the Plantation Period, a lane of oaks was planted along the main access to the planter's home. John Hamilton Couper whose family owned the Cannon's Point Plantation from 1794-1861 was an ardent amateur naturalist who introduced many different plant species (Lyell 1849). Land clearance probably left few areas of Cannon's Point untouched. In some areas, live oaks (Quercus virginiana) are all the same size and pines are heavily concentrated in other areas (it is not clear if this condition represents planting of pine or regrowth of a previously cleared area).

Floral cover of the Marsh Ring site (9GN57) is presently dominated by cedars (Juniperus virginiana) which evidence wind forms and stunting. A few oaks are observed. The understory is sparse but yaupon (Ilex vomitoria) and marsh (Iva sp.) elder are present. Yucca (Yucca alterniflora) grows on the highest elevation of the ring. Because the ring is open on its northeast arc, a marsh vegetation composed primarily of Spartina alterniflora grows within. Outside the ring stretches an extensive salt marsh dominated by Spartina and Juncus romerianus, interrupted only by meandering tidal creeks. Presently, the closest tidal creek is located at approximately 160 meters distance. Nearest high ground is 35 meters southwest, the edge of which is fringed by palmetto (Serenoa repens), yucca, oak, and cedar. The West Ring (9GN76) is located some 85 meters southwest of the marsh ring on high ground. On its south arc, this ring erodes into the marsh. Oaks, magnolia (Magnolia grandiflora), cedar, hickory (Carya), and hackberry (Celtis) are common in the floral cover of this area. Yucca, palmetto, Smilax sp., yaupon, and grapes (Vitis) contribute to a rather dense understory in the immediate ring environment. Spanish moss is found within the forest margin.

In the Hampton River, the average annual tidal factor is guaged at 2.1 meters (United States Commerce Department 1954). At periods of high tide, the marsh ring is completely surrounded by water and the center innundated. Fiddler crabs (Uca spp.) abound in and around the marsh ring. A species of land crab is frequently observed in the trees atop the marsh ring but incidence drops as one progresses into the forest. Salicornia virginica a common marsh plant is frequently observed in the moist areas near the land edge (Carlton 1975:13). A small freshwater stream possibly the result of ditches constructed during the plantation period empties into the marsh west of the ring sites. Water is caught in a shallow depression inland and flows easterly into the marsh during wet periods. Flow is minimal during dry periods. Although topographic maps show several artesian wells in the area of Cannon's Point, none are presently free-flowing.

Terrestrial animals seen in the vicinity of the rings include birds, mammals, and reptiles; both native and introduced forms. Deer, raccoons, and opossums have been observed during daylight hours and after dark. Feral pigs, cows, and horses are presently free in the area. Marsh hawks (Circus cyaneus) and red-tailed hawks (Buteo jamaicensis), are the largest predatory birds seen. Turkey vultures (Cathartes aura) are frequently observed. Wood ibis (Mycteria americana) and herons (Ardea herodias and Hydranassa tricolor) are common shore birds. Red-winged blackbirds (Agelaius phoeniceus), mourning doves (Zenaidura macroura), pileated woodpeckers (Hylatomus pileatus), painted buntings (Passerina ciris), and blue jays (Cyanocitta cristata) are frequently observed in the immediate surroundings. Diamond-back terrapins (Malaclemys terrapin) and musk turtles (Kinosternon sp.) were observed on the ring sites.

Several snakes were present: black racer (Coluber constrictor), indigo (Drymarchon corais), and corn snake (Elaphe guttata).

Excavation Strategy: Objective and Techniques

A review of available shell ring literature initially suggested the following problems for investigation:

a. ring function
b. subsistence reconstruction
c. radiocarbon dating for southern distributional extent

Determining the manner by which the site was deposited offered the most plausible means of approaching the question of function. Utilization of large, adjacent excavation units was thought to provide the most efficient means of examining stratigraphy, changes in contour, or features related to structures on or in the ring. A 3 x 3 meter excavation unit size was selected. Additionally, systematic mapping of cultural and subsistence material was planned to overcome the difficulties of excavating a shell site.

Screening was considered imperative to reconstructing aboriginal subsistence strategies. Past reports had all too casually dispensed with this aspect. One-fourth inch screen was selected for standard screening with additional reliance on flotation of material from features. Quantities of faunal material were anticipated, but recovery of floral remains was considered particularly important. Flotation was intended to provide the means of recovering floral material.

Radicarbon dates were similarly considered important. The Cannon's Point excavations represent a southern extreme of shell ring distribution. On the basis of the nearest similar site, a relative date of circa 1500 BC

was selected as a working date. The Sapelo Island Number 1 Ring had an average radiocarbon date of 1750 BC and primarily plain ceramics. The marsh ring was known to have decorated sherds from a surface collection made in 1972 by the author.

Summer 1973: Excavation Summary

Field crew members numbered five persons for the ten week session. A section of the south arc of the marsh ring was selected for excavation because of the absence of tree cover. A transit station (0N,0E) was established on the southwest arc and tied to a benchmark on the nearest high ground (Fig. 4). A surveyor's stake from the 1970 property survey was located and a large cedar next to this stake became the benchmark. An east grid line was set out with stakes at 3-meter intervals. From this line, a north-south stake line was set out at 15E and 18E. The area included a 3-meter wide cut across the ring from south to north. Originally, excavating a north-south trench across the ring was planned.

The matrix encountered in the south arc was a sticky, chocolate colored clay. It was impossible to separate material in the screen. Midway through the field session, a pump was secured allowing water separation of material. This procedure facilitated processing of excavated midden material and undoubtedly increased recovery. Water was obtained from two reservoir sumps dug in the marsh floor south of the ring. While digging the second of these pits, considerable aboriginal cultural materials were exposed at a depth of 0.6-0.7 meters below the present marsh surface. Additionally, the stumps of two trees were observed but no shell deposit was seen.

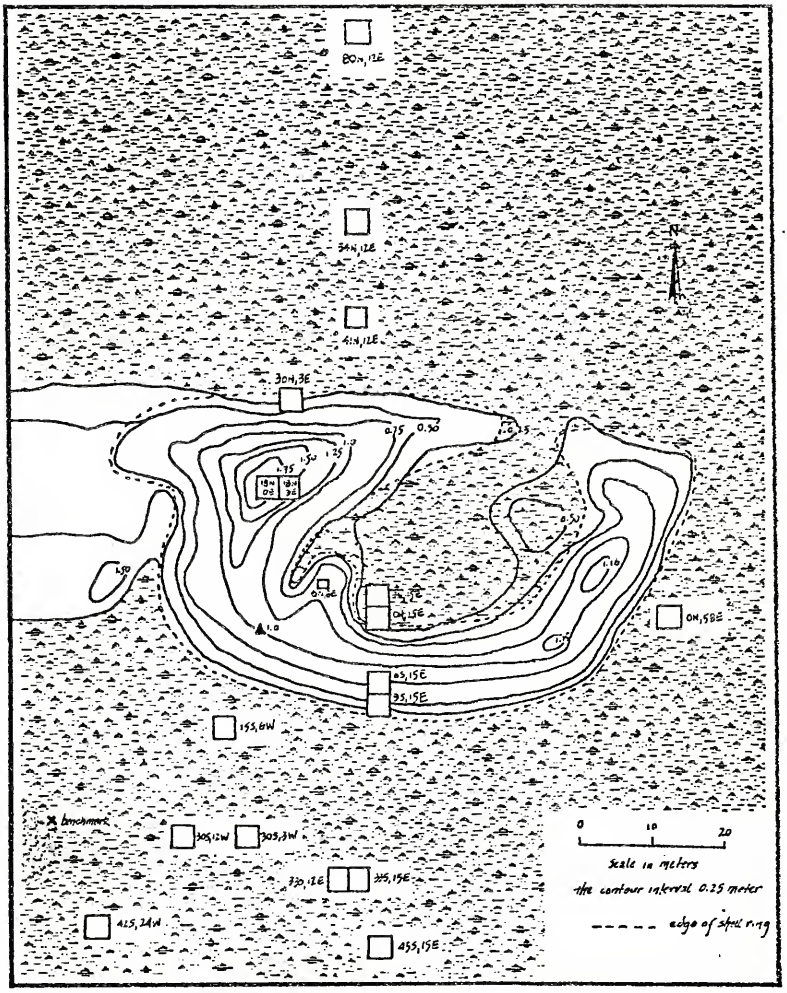


FIGURE 4. The Marsh Ring (9GN57) and Marsh Excavation Units.

In the midden excavation units (□6S, 15E and □9S, 15E), removal of material proceeded in 15 cm levels; actual midden removal was accomplished by 5 cm layers. Initially three and four prong rakes were used but these were discarded since it became apparent that they posed problems for vertical control as well as the trauma to midden inclusions. Trowelling was a slower but more precise means of removing material.

Tests were begun in the ring center (□0N, 15E and □3N, 15E). Stripping of superficial marsh grasses was done by hand. Initially, screening was attempted but this proved productive only in areas where midden was projecting into the excavation units (in □0N, 15E only). Finally, a 1 x 1 meter sondage was made prior to leaving the field. This test revealed a sandy deposit below the marsh grass and was virtually sterile.

Excavation units in the ring midden provided quantities of faunal material. In addition, a sizeable ceramic sample was obtained. Sherds were all fiber-tempered. Plain ceramics were more frequent than decorated. Motifs included punctation, incision, and combinations of these. Several sherds suggestive of Orange Series motifs were recovered. Shell tools, basally blunted and having holes near the spire, were infrequent midden inclusions. Several examples of worked bone were recovered but none were decorated beyond circumferentially incised lines. Neither of the units opened in the ring midden were completed.

Excavations below the marsh surface (□27S, 18E and □27S, 21E) exposed fiber-tempered ceramics in association with grit-tempered sherds. Faunal remains were present but minimal. A few nutshells (Carya spp.) were recovered. These findings suggested a now-drowned cultural deposit made

at a time when the environment in the vicinity of the marsh ring differed significantly.

Testing in the ring center was not extensive and revealed no features suggesting either structures or disturbance. In the excavation of □0N,15E, the extent of midden deposit contracted perceptibly toward the ring evidencing slump. This indicated that the ring was higher and basally thinner than its present dimensions.

Spring, 1974: Excavation Summary

The field crew numbered nine people for the ten week session. Of initial concern was the completion of the two opened units on the south arc of the ring. It soon became evident, however, that this pursuit was an impossibility given the tidal conditions. Ground water levels were too high and continuous pooling of muddy water forced abandonment of this area. Attention was turned to the area of highest elevation on the north side of the ring. The grid system was extended northward and two adjacent units (□18N,0E and □18N,3E) were opened in the area of maximum height. These 3x3-meter units extended along the apex of the ring.

As a direct result of our 1973 findings, changes were made in both excavation techniques and in processing. Excavation proceded by 5 cm. levels to allow observation of changes in cultural material, flora, and fauna. A 30 $cm.^2$ column sample area was reserved in each square to allow qualification and quantification of midden constituents. Screen size was reduced to 1/8-inch. This change was motivated chiefly by dissatisfaction with previous floral recovery. Two standing screens having 3/4x3/8-inch expanded mesh upper screens and 1/8-inch detachable underscreens had been

constructed. Use of flotation sampling was again planned for features and areas of high humic content.

A sump was dug several meters off the north edge of the ring. Again, ceramics were exposed associated with the remains of trees. No aboriginal flora or faunal materials were recovered. The grid was extended to enclose this area (□41N,12E) and the finds were mapped in place. The original intention in digging the sump was to allow processing of excavated materials on the north side of the ring. Wheelbarrows were used to transport excavated midden to the screens on the marsh floor for processing. This practice eliminated problems from backdirt.

In addition to the sump excavation unit (□41N,12E), two additional units were opened in the marsh north of the ring (□54N,12E and □80N,12E). A small quantity of ceramics and one historic or modern fencepost were recovered. The post was cedar and had bark adhering to the exterior. As the distance of excavation units increased from the vicinity of the Marsh Ring, the incidence of cultural material decreased.

A superficial scattering (0-10 cm.) of grit-tempered sherds was observed in the north ring excavation units. No decorated ceramics were recovered during this field session. One-half meter of midden material was removed and processed from each square. One shell disc bead and one bone point were recovered in the screens. Faunal recovery was heavy; flora, particularly Carya and Celtis were frequently observed in the matrix and in the screens.

Because the excavations in the marsh north of the ring had shown no concentration of cultural material, attention was turned toward the south marsh. Two adjacent 3x3-meter units were opened (□33S,15E and □33S,12E).

Both squares proved productive far in excess of our expectations. Excavation proceeded by shovel until cultural material was encountered. Usually fragments of carbonized wood were exposed immediately above the cultural deposit. Once cultural material had been exposed, trowels were used. Cultural materials and features were mapped in place for future study of distribution and associations. A large stump, apparently burned in place was an interesting feature. Adjacent to it was a large cedar root burned only on the side next to the stump (west).

Attempts to return to the two south excavation units in the ring proper continued to be frustrated by high tides. A new unit (□30N,3E) opened on the north arc of the ring at the intersection of midden and marsh met with the same problems. It was possible, however, to note that slump in this area had been more gradual than that noted in the south ring interior (□0N,15E).

A second ring site was identified by testing during the Christmas holiday in 1973 (Fig. 5). The West Ring (9GN76) was located on land southwest of the marsh ring. It was incomplete on the south side where intersection with the marsh occurs. Presently the site is located beneath a substantial humic layer from hardwoods and thick understory. A 2x2-meter unit (Test 1) had been opened on its north arc and screened using 3/4x3/8-inch expanded metal screen. Fifteen centimeter levels were used but time did not allow completion of the test. After the unit had been excavated to 45 cm. below the surface, only the southern 1x2 half of the square was excavated to sterile (65 cm.). Sand-tempered sherds and one possible complicated stamped sherd were recovered in the first level; below this

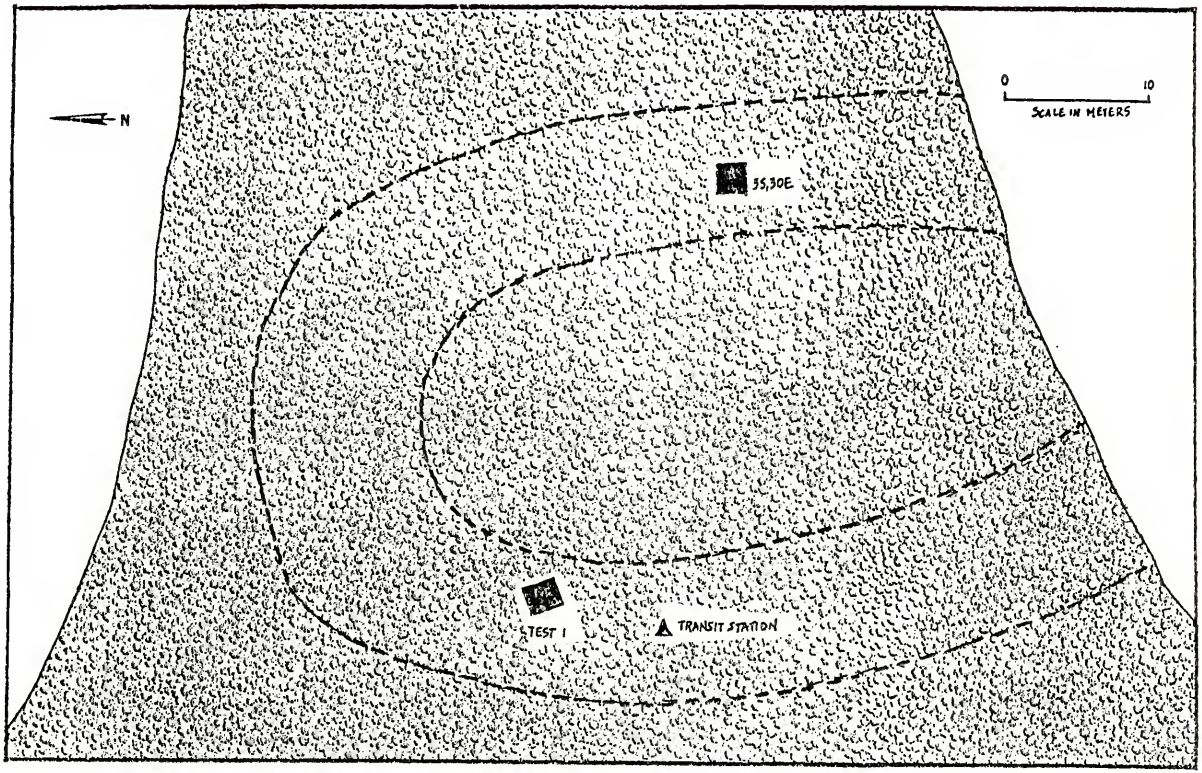


FIGURE 5. The West Ring (9GN76) - Diagrammatic Representation.

decorated and plain fiber-tempered sherds were collected. Marsh periwinkle (Littorina irrorata) shells were recovered in greater frequencies in this test than in the marsh ring. Their use as food items was indicated by the consistent removal of the spires of each shell.

During the Spring 1974 Field Session, the unexcavated northern 1x2 meter half of Test 1 was excavated and processed using water separation over 1/8-inch screen. The results presented in Appendix 2 offer a strong case of the value, in terms of recovery, for use of fine screens in shell sites. A second 2x2 meter test (□5S,30E) was opened on the east side of the ring. Material was removed in 5 cm. levels. The unit was not completed prior to the close of this field Session.

Preliminary Observations

After the first two field sessions, numerous observations were stated preliminary to formulating hypotheses by which to structure the following Summer Field Session excavations. There were many interesting aspects of excavation findings to consider for more vigorous testing. An assessment of these observations follows.

A. Environmental change: The presence of a cultural deposit below the present marsh surface suggested an instability in the marsh in this area. Evidence of the continuing changing relationship of marsh and high ground on the east side of Cannon's Point is observed by the marginal area of dead and dying trees along the marsh edge. The marsh was thus perceived as a dynamic factor in the Cannon's Point environment. The fact that the ring, at deposition had stood in a forested area indicated that the "fishtrap" hypothesis was not valid.

B. Ceramics: A plain to decorated ceramic continuum seemed to be indicated by preliminary findings from the south ring at excavation units. Decorated ceramics were confined to the upper three levels (0-45 cm.). Below that, to the depth that excavation had progressed (90 cm.), only plain ceramics were recovered. A cultural level having fiber-tempered ceramics and grit-tempered ceramics located 0.5-1.0 meters below the present marsh surface suggested an occupation following the ring-building inhabitants and not associated with mollusc midden debris. While flora, fauna, and cultural material were recovered, no mollusc concentration was exposed beneath the marsh surface. Some contact with the St. Johns River area of present day Florida was indicated by the presence of Orange Series ceramic motifs. These are illustrated in Appendix 3. Evidence of this contact had been initially observed by Holder (1938) and noted again by DePratter (n.d.) at the Bony Hammock site on St. Simon's Island.

C. Lithics: An increased amount of lithic material, slight though it was, in the marsh cultural level and the West Ring indicated an availability and use not demonstrated in the Marsh Ring. This suggested a change related to the increased amounts of deer present.

D. Subsistence: Marked differences in faunal recovery were obvious. For example, fish remains were numerous in the Marsh Ring faunal assemblage but the lower levels of the West Ring provided evidence that use of fish had far greater importance (both by number of species identified and number of individuals) to the inhabitants of that site. Marsh periwinkles, small marsh-dwelling gastropods were found in the West Ring midden used as food items, suggesting a need to utilize less productive resources.

Periwinkles have far less food value to offer for the time expended in gathering and preparation. The midden deposit was much thinner (0.65 cm) in the West Ring than in the Marsh Ring (average 1.3 m). Appendix 5 clearly shows that faunal elements present in the marsh cultural level were higher in numbers of deer and small mammals. Reptiles were noticeably more frequent. Fish, while present, were not numerous.

E. Dates: The working date, selected from a comparison of the Sapelo Island Ring (Number 1) suggested a 1000 year-time span (marsh ring, West Ring, and marsh cultural deposit). Because grit-tempered ceramics included no check-stamping, a later decorative trait, a terminal date of 750 BC was selected. The working time range was then 1750-750 BC. Table 4 lists radiocarbon dates for shell ring sites.

After considering these points, an hypothesis based on marsh change to account for the observed differences in faunal procurement offered a point from which future excavations could be directed and analysis structured. Test implications supporting such an hypothesis basically depended on continuing support for the observations noted above. The proposed 750 year time span did not seem unreasonable given the three cultural entities. Length of debris accumulation was estimated from Hilton Head Island sites. Calmes (1968) reported that the Sea Pines ring had two feet of deposit and totalled approximately 300 years. On Hilton Head Island, Calmes (1968: 45-58) obtained radiocarbon dates for the Ford Rings (Large and Small) representing a total deposition time in excess of 800 years (eight feet and two feet of midden deposit respectively). Test implications would be examined through extending excavation in the West Ring and marsh cultural deposit.

Table 4: Radiocarbon Dates for Shell Ring Sites.

Site	Date	Material/Significance	Source
Yough Hall	1820 BC:3770 ± 130 BP (M-1209)	Oyster: Upper level	Williams 1968:330-331
Large Ford Ring	1635 BC:3585 ± 115 BP (I-2850) 1170 BC:3120 ± 110 BP (I-2849)	Charcoal: 56-57" (Level 9) Oyster: 27" (Level 4)	Calmes 1968:47
Small Ford Ring	1940 BC:3890 ± 110 BP (I-3047)	Charcoal: Basal level	
Sea Pines Ring	1450 BC:3400 ± 110 BP (I-2848) 1160 BC:3110 ± 110 BP (I-2847)	Clam: 20-26" (Basal level) Conch: 0-6" (Upper level)	
Sapelo Island	1650 BC:3600 ± 350 BP (M-39) 1850 BC:3800 ± 350 BP (M-39)	Oyster: Dates early ceramics	Williams 1968:329
A. Busch Krick	1265 BC:3215 ± 80 BP (UGA-226) 1520 BC:3470 ± 85 BP (UGA-227)	Conch: 5.7-6.0 ft. Charcoal: 4.6 ft.	Crusoe and DePratter 1972:13-19
Cannon's Point Ring (Marsh Ring)	1815BC:3765 ± 90BP (UM-521) 2240 BC:4190 ± 90 BP (UM-520)	Oyster: Dates upper level Oyster: Dates lower levels human cranium	Eldridge 1975
West Ring	1655 BC:3605 ± 110 BP (UM-523) 1910 BC:3860 ± 90 BP (UM-522)	Oyster: Dates upper levels Oyster: Dates lower levels	

Completion of all opened excavation units in the marsh ring would end excavation at that site. Analysis would be oriented at reconstruction of the aboriginal environment.

CHAPTER 3

EXCAVATIONS ON CANNON'S POINT - PART II: SUMMER 1974, WINTER 1975

Formulation of Hypotheses and Test Implications

Information from analysis was at this point adequate for the evaluation of research directions. Each of the previously stated observations was carefully considered. Overall, the most concrete and interesting aspect of the excavation was the indication that a change in resource usage occurred. Using the marsh ring as a base, change is reflected in the West Ring and the marsh cultural level. The question of cause was posed. The approach then taken considered the possibilities that such a finding could have cultural cause, environmental cause, or a combination of these factors could be responsible. It was decided to pursue causal statements within the ecological realm since the cultural status of these populations was not sufficiently developed (i.e. social organization, population density, population size, etc.).

Several hypotheses were generated and suitable test implications were formulated.

Hypothesis 1

H_o: No perceptible change in resource usage is evident among the Late Archaic sites in the Cannon's Point area.

H_1: A perceptible change in resource usage is evident among the Late Archaic sites in the Cannon's Point area.

Test Implications

I_1: Inter-site vertebrate inventories are comparable.

I_2: Inter-site molluscan usage is comparable.

This hypothesis offered the ability to objectively test the observation that a change in resource usage was in fact observable and repeatable through new excavations.

Hypothesis 2

H_o: During the period of occupation (ca. 1500-750 BC) no changes in the marsh occurred.

H_1: During the period of occupation, marsh encroachment and silting occurred.

Test Implications

I_1: Submarsh shell midden having fiber-tempered ceramics is not found.

I_2: Changes in the marsh occurred subsequent to the occupation.

This hypothesis was offered both to suggest causality and establish the time of the proposed ecological change.

Hypothesis 3

H_o: Marsh silting and land encroachment would have no effect on molluscan and vertebrate fauna availability.

H_1: Marsh silting and land encroachment would have an effect on molluscan and vertebrate fauna availability.

Test Implications

I_1: No effect can be documented in the literature.

I_2: No effect can be demonstrated in excavation findings.

These hypotheses offered a framework within which to structure the Summer and Winter Field Sessions. Specific excavation goals were devised. Extended excavations of the marsh were planned. Excavations in the marsh north of the marsh ring indicated that the cultural concentration evident on the south side of the ring was not present. Four units had been opened in the marsh south of the ring and at least six more were planned to allow

testing of areas between the marsh ring and land. Determination of the limits and focal areas of the cultural deposit was a goal. Testing east of the ring was planned. If time allowed, additional testing of the West Ring was planned. However, the investigation had been initially committed to a strategy of collection of deep stratigraphic samples of floral, faunal, and cultural materials from the marsh ring and no reason to abandon these priorities was seen.

Recovery techniques would continue in the same manner. Trowelling of exposed material in the marsh excavation units was believed to be comparable to removing the material in a level. Mapping of in-place finds was particularly important in determining the depositional nature of the marsh cultural level.

Summer 1974: Excavation Summary

Only six weeks were given to excavations in the Late Archaic component of the project locale during this field session. Work proceeded on the north marsh ring units. Three additional units were opened in the marsh south of the ring (□15S, 6W; □30S, 3W; □30S, 12W). Several levels of the remaining uncompleted West Ring unit (□5S, 30E) were processed. Crew members numbered between 12 and 15 persons daily.

Approximately one meter's worth of midden material was processed from the north ring units (□18N, 0E; □18N, 3E). Of special interest were two features: Feature #18 (□18N, 3E) and Feature #21 (□18N, 0E). Feature #18 had initially been defined during the Spring 1974 session as an area of increased incidence of floral and faunal material with a high humic content. The feature was sampled for flotation on several occasions. A large crab concentration (*Callinectes* sp., approximately 100 individuals represented) was exposed during the Summer Field Session. Feature #21, also initially

defined during the Spring Field Session, was observed to be an area of dark brown soil within the shell deposit. As excavation progressed, a level of cemented shell was encountered. The most visible aspects of this feature were the numerous hackberry seeds and the ashy condition of the shells. This feature was assumed to represent a hearth. No decoration was obvious on any of the ceramics recovered from the north excavation units to this point.

One south ring unit (□6S, 15E) was reopened but tidal problems continued. A well point was positioned in the southern (and lowest area) portion of the square against the baulk, but problems with pump availability prevented continuous use of this means of water evacuation. The unit was again closed after the identification of Feature #23, an area of blue-grey sand believed to represent submidden soil mixed with obviously weathered oyster and clam shells.

The marsh excavations were notable. Each unit contained several lithic fragments, most of which were worked. Additionally, some worked bone was recovered. Deer antler was a more common item than previously observed. Ceramics continued to be exposed in the same associations. While carbonized material was recovered in each unit, no large concentrations of tree stumps or roots were encountered.

A 1 x 1-meter test (□6N, 8E) was opened in the shell projection in the center of the marsh ring. The object of this test was determination of ceramic contemporaneity of this deposit. Ceramics were all plain fiber-tempered sherds. Sterile was reached at 0.75 meter below the present surface. Material was removed by trowel and hand rake and processed through 3/4 x 3/8 inch mesh using water.

Winter 1975: Excavation Summary

With the exception of a brief look at submidden sterile in a 1 x 1-meter test (□6N, 8E), commitment to a rather laborious processing of midden material resulted in uncompleted excavation units. An overriding objective of the Winter Field Session was the completion of excavation units. Crew members numbered six for the 10-week session. Weather was expected to be problemmatical but fortunately was mild.

The first good look at submidden sterile came one month into this field session when □18N, 0E was completed. Submidden was reached at 1.65 meters below the surface. Two features (#26, #27) were defined in the interface. Both were pottery concentrations having plain fiber-tempered sherds with the exception of one curvilinear incised and punctated fiber-tempered sherd. A human cranium was recovered at 1.3 meters below the surface, well within the midden deposit. A human pelvis was found at approximately the same level but was three meters distant from the cranium. Another remarkable feature (#24) was identified within the shell deposit. This feature had a very high faunal content and was reminiscent of the remains of a dumped cookpot.

Elevation of sterile was higher than anticipated. The midden deposition was apparently made in an area having a slight sandy knoll. It is interesting to note that decorated ceramics were encountered below one meter in depth. Decorative motifs were combinations of punctation and incising.

Considering the time required to process midden material, it was decided to excavate only one half of the remaining north excavation unit (□18N, 3E) to sterile. The southern half of this square was selected

because it contained Feature #18, an area of increased fauna and flora. Sterile was reached at 1.65 meters. Decorated ceramics were encountered at 1 meter and below. A projectile point and an elaborately engraved bone pin fragment were recovered from the interface.

On the south side of the ring, □6S, 15E was finally completed. Again the interface was a highly productive area. A plain bone pin, a worked lithic specimen, and a quantity of ceramics were recovered. Decorated ceramics were recovered in this unit in Levels 1-3 (0-45 cm) and Levels 7-9 (90-135 cm). Sterile was reached at 1.3 meters below the present surface. A well point was successfully used to evacuate water from this unit. A human molar was recovered from the interface.

When the human cranium was recovered in □18N, 0E, no additional human skeletal material could be observed. Since very little skeletal material had been recovered from shell ring sites, examination of the area behind (west) the baulk was indicated. A 1.5 x 2-meter excavation unit was opened (□19.5N, 2W) to expose the adjacent area. After removing 1.75 meters of shell overburden, no additional material was observed. No screening was used, but a visual collection of flora, fauna, and cultural material was made. Excavation of this area added a 2-meter expanse for observation of the interface. More ceramics were recovered from this area than in the midden. All ceramics were plain fiber-tempered.

Four excavation units were opened in the marsh: three south of the ring (□45S, 15E; □24S, 24E; □42S, 24W) and one east of the ring (□0N, 58E). In the east excavation unit, only three raccoon (Procyon lotor) teeth were recovered after 0.75 meter of excavation. Instability of the floor (sponginess) forced a premature closure. The physical conditions encountered in the unit were unlike any of the south units.

Each of the south marsh excavation units was remarkable in the quantity of cultural material recovered. The southernmost, and least productive, square excavated in the marsh was □45S, 15E. The most westerly and moderately productive was □42S, 24W. Additionally, below the cultural level, white sand was exposed. This unit is closest to present high ground. In the vicinity of the original marsh sump excavations of 1973, □24S, 24E was opened. A fragment of human cranium was recovered from this unit along with the cultural and subsistence assemblage. It should be noted that during this field session, an attempt was made to screen material excavated from the marsh units. This proved unfeasible because of the added water problem created by the water-screening. There was too much additional seepage generated. If the screening could have been done at some distance from the opened excavation unit, it would prove more acceptable.

The West Ring excavation unit (□5S, 30E) was completed. In the basal midden deposit, numerous potsherds were recovered. Sherds were plain and decorated fiber-tempered ceramics. The decorative motifs were unusual in comparison with those previously recovered. Combinations of punctation and incision in curvilinear and rectilinear designs were unlike the primarily horizontal application usually observed. Quantities of fish otoliths were recovered in the lowest levels of this unit in the same manner as Test 1.

Finally, the last excavation unit to be opened in the vicinity of the marsh ring was □12N, 15E, positioned in the center of the ring. The location of this unit offered the ability to check the extent of the projection of shell in the center of the marsh ring. Previous testing had

revealed that it was contemporaneous to the surrounding midden on the basis of ceramic constituents. However, as the overlying marsh accumulations were removed, the projection was seen to extend into the center much farther than indicated on the surface. Probing of this area revealed that the situation with regard to extent of the projection is unclear. Overlying marsh would need to be removed to make an assertion of extent or absence in an area.

Summary of Excavation Findings

In terms of material excavated and information gathered, the Winter Field Session had been one of the most profitable sessions. Excavation units in the marsh ring had been completed providing an observation of the condition of the submidden deposit. A second unit in the West Ring and five additional marsh excavation units had been completed. All of the previous conceptions of the progression of cultural events on the coast were questionable in light of the information gathered. The working date no longer inspired any confidence. Chronological placement by radiocarbon dating could conceivably assign these sites early or late dates. Some findings worthy of discussion follow.

Interface

The interface proved to be a particularly productive area. More cultural material was concentrated in this area than any level of the midden deposit or any feature. Elaborately engraved bone pin fragments, supposedly a late cultural feature were recovered from the base of the midden deposit. Decorated ceramics and two examples of lithic artifacts came from this area of the site.

Ceramics

Plain and decorated ceramics occur in these ring sites without stratification. Thus, a plain to decorated ceramic continuum could not be supported by the findings. The fiber-tempered ceramics from the north excavation units contained a perceptible amount of grit-tempering, not observed in the ceramic samples from the ring sites. This suggested a situation of transition in ceramic manufacturing techniques to grit-tempered types.

Skeletal Material

Human skeletal material, though scanty, was not recovered in the context of an articulated burial, but scattered throughout the midden deposit.

Construction

Further evidence of the forested nature of the environment prior to ring deposition suggested that the site was constructed by human inhabitants rather than natural forces. The fact that the interface represented such a heavy concentration of human cultural remains was considered evidence that the midden had begun to accumulate as the result of human subsistence practices or intentional placement.

Evaluation of Hypotheses and Test Implications

As the Summer and Winter Field Sessions progressed, it became evident that one hypothesis was unprovable given the extent, direction, and capabilities of excavations and a second unsupported by excavation findings. An examination of these hypotheses is made to point out the problems.

> Hypothesis 3: Null Hypothesis - Marsh silting and land encroachment have no effect on molluscan and vertebrate faunal availability.

While an effect upon molluscan and some vertebrate fauna by increased amounts of sediment could be documented as possible (Buck 1956: 249-261; Galtsoff 1956: 408-419), our excavation findings did not demonstrate such evidence. No relict oyster beds were defined. While a probable margin of inundated land can be observed from aerial photographs of the area, no direct correlation between silting and encroachment could be demonstrated for local molluscan fauna. The Null hypothesis, while not acceptable, is similarly not rejectable either. This is a situation in which reformulation and a new excavation strategy are required prior to acceptance or rejection.

> Hypothesis 2: Null hypothesis - During the period of occupation (circa 1500-750 BC) no changed in the marsh occurred.

Discernible changes in the marsh in the vicinity of the ring sites occurred subsequent to the fiber-tempered occupation. Radiocarbon dates indicate that inundation of the south marsh cultural level occurred after 835-820 BC. No submarsh midden deposit having fiber-tempered ceramics was exposed by excavation supporting Test Implication 1. No molluscan fauna was exposed in association with any material from the marsh cultural level. Argument for accepting the Null hypothesis is felt to reflect the findings at the site.

> Hypothesis 1: Null hypothesis - No perceptible change in resource usage is evident among the Late Archaic sites in the Cannon's Point area.

In the analysis of faunal material from the three cultural deposits in the Cannon's Point area, consistent differences in faunal inventories are observed. This involves molluscan and vertebrate faunal components. Appendix 5 lists the results of the faunal analysis from the Late Archaic

occupations. Intersite vertebrate inventories are not similar. The West Ring demonstrates a higher reliance upon fish. Analysis of fauna from the marsh cultural level reveals an increased use of mammals and reptiles. Intersite use of molluscan resources is not similar. The West Ring indicates a subsistence use of periwinkle, an incidental mollusc in the marsh ring. The marsh cultural level demonstrates no use of molluscs. Therefore, neither of the test implications are supported. The Null hypothesis must be rejected for lack of supporting evidence and the Test hypothesis accepted.

CHAPTER 4

ANALYSIS OF EXCAVATED MATERIALS

Radiocarbon Dates

Radiocarbon dates were not available until May, 1975, well after the close of the Winter Field Session. Material for dating was submitted to the University of Miami Radiocarbon Dating Lab.

> Apparent age was calculated relative to 0.95X NBS oxalic acid radiocarbon dating standard. Quoted precisions are one standard deviation and include only the counting precisions of the unknown sample, background, and modern standard. (Eldridge 1975)

A discussion of the six samples, their proveniences, and significance follows.

The Ring at Cannon's Point (Marsh Ring): 9GN57

Two samples were submitted from the north excavation units. Since these units were located in the area of maximum depth of deposit, material for dating from this area was desirable.

1815 BC 3765±90 BP UM-521	Sample taken from q18N, 3E at approximately 13 cm below the present surface (1.13 m below datum). Sample consisted solely of oyster shells (*Crassostrea virginica*). This sample dates the upper levels of this deposit and was removed just below the humic zone. Sample is from Shell Sample #118, Field Specimen #848.
2240 BC 4190±90 BP UM-520	Sample taken from q18N, 0E west baulk at a depth of 1.46-1.58 m below the surface (2.09-2.21 m below datum). Sample taken from the immediate vicinity of human cranium. Sample of oyster shell exclusively. Sample dates the lower midden levels and the human cranium. Sample is from Field Specimen #663.

The West Ring: 9GN76

Two samples were submitted from the east baulk of Test I with the intention of dating the upper levels and the basal levels of the deposit.

1655 BC
3605±110 BP
UM-523

Sample consisting solely of oyster shells (Crassostrea virginica) taken from approximately 19 cm below the surface (1.86-1.97 m below datum). Sample dates upper levels of midden. Removed just below humic zone. From Field Specimen #83, Shell Sample #15.

1910 BC
3860±90 BP
UM-522

Sample taken from the lowest level of midden deposit at approximately 46 cm below the surface (2.24 m below datum). Shell Sample #16 comprised only of oyster shells (Crassostrea virginica). Field Specimen #84.

Table 5 provides radiocarbon dates for non-ring fiber-tempered sites.

Marsh Cultural Level

Two samples were submitted from separate proveniences on the south side of the marsh ring (9GN57). The first sample was collected during the summer of 1973; the second in the spring of 1974. Dates from these proveniences were felt to be requisite for determining the age of the fiber-tempered/grit-tempered ceramic associations. Additionally, some indication of the length of time represented by the marsh build-up would be given.

820 BC
2770±95 BP
UM-519

Sample collected from □27S, 18E and consisted of wood taken from a tree stump associated with floral, faunal, and cultural materials. Ceramics were fiber-tempered and grit-tempered. Depth of the sample was approximately 61 cm below the present marsh surface (3.21 m below datum). Field Specimen #40. Dates demise of tree--probably at time of marsh encroachment.

835 BC
2785±80 BP
UM-518

Sample taken from □33S, 12E at a depth of 76-87 cm below the surface (3.36-3.47 m below datum). Field Specimen #279 consisted of carbonized material from a carbon concentration associated with faunal remains. Sample dates the fiber-tempered/grit-tempered cultural association.

Table 5: Radiocarbon Dates for Fiber-tempered and Related Sites.

Site	Dates	Material/Significance	Source
Rabbit Mount	2515 BC:4465 ± 95 BP (GXO-345)	Charcoal: 18/B_{11} 1.2-1.8 ft.	Stoltman 1966:872
	2500 BC:4450 ± 135 BP (GXO-343)	Charcoal: 15/B_{11} 1.3-2.4 ft.	
Clear Mount	920 BC:2870 ± 110 (GX01752)		Peterson 1970:80
Stallings Island	1780 BC:3730 ± 150 BP (M-1278)	Charcoal: Pit 4, base of pottery	Bullen and Greene 1970:10-12
	2500 BC:4450 ± 150 BP (M-1277)	Charcoal: Pit 2, below pottery	
Bilbo	2165 BC:4125 ± 115 BP (O-1047)	Charcoal: 5.5-6.0 ft. (dates lowest pottery)	Williams 1968:329-330
	1870 BC:3820 ± 125 BP (M-1111)	Charcoal: 5.5-6.0 ft. (dates lowest pottery)	
	1780 BC:3730 ± 125 BP (M-1112)	Bone: 5.5-6.0 ft. (dates lowest pottery)	
	1750 BC:3700 ± 125 BP (M-1109)	Charcoal: 3.0-3.5 ft.	
Dulany	1820 BC:3770 ± 200 BP (M-236)	Oyster: Dates pottery	Williams 1968:329
Daws Island	1445 BC:3395 ± 100 BP (GX-2281)	Oyster: Dates pottery, burial	Brockington 1971: 128
Refuge	970 BC:2920 ± 200 BP (M-267)	Shell: Dates refuge ceramics	Williams 1968:329
Cannon's Point Marsh	820 BC:2770 ± 95 BP (UM-519)	Wood: Dates cultural level	Eldridge 1975
	835 BC:2785 ± 80 BP (UM-518)	Carbonized wood: Dates cultural level	

Correction factors based on dendrochronological analysis is presented here to provide an indication of realistic dates. All dates are given as date range from Ralph, Michael, and Han 1973: 1-20.

Radiocarbon Date	Dendrochronological Correction Range
1815 BC+90 years	2180-2070 BC
2240 BC+90 years	2910-2580 BC
1655 BC+110 years	2110-(1750-1710) BC
1910 BC+90 years	(2410-2340)-2140 BC
820 BC+95 years	1010-800 BC
835 BC+80 years	1010-810 BC

Cultural Remains

Cultural inventories reconstructed by archaeological excavations in shell ring sites are not elaborate. Based on the raw material utilized in construction, four categories are recognized: ceramic, bone/antler, lithic, and shell. It is pertinent to remember that cultural items made from plant resources constitute a potentially diverse category no longer recoverable. In sites where conditions of preservation have been favorable (e.g. caves or bogs), the contribution of plant resources is impressive. The absence of cultural items constructed from plant materials generally creates a rather lopsided view of aboriginal technology.

Although occupational debris in the marsh cultural level was covered by a considerable deposit of muddy silt, no examples of culturally modified wood or fiber were recovered from aboriginal contexts. This would seem to indicate that inundation occurred so slowly that deterioration of any such material was completed prior to submergence. Similarly, no impressions of basketry, matting, or twining were observed on fiber-tempered sherds.

Ceramics

Ceramic typology mirrors the lack of concensus previously noted in consideration of cultural chronology. Claflin's report (1931) of the Stalling's Island excavations introduced the terms Stalling's Island culture and Stalling's Island pottery. Unfortunately, Claflin did not recognize the ceramics as being fiber-tempered or propose any relationship to known vegetal-tempered ceramics from Florida (Wyman 1875). Holmes (1894) had more succinctly described vegetal-tempering in aboriginal ceramics. Holder (1938) noted vegetal tempering in the ceramics in his collections from St. Simon's Island, Georgia. As a result of his findings, a St. Simon's Fiber-Tempered type was recognized. This type, however, was never formally described, and Holder's work has been published only recently (Chance 1974).

That this ceramic type existed and was used is documented by Caldwell and Waring's application (1939) of the nomen in their description of Chatham County, Georgia, pottery types. The Bilbo site report, written in 1940 but not published until 1968, uses the terminology. Griffin (1943) defined the Stalling's Island types and applied the Stalling's nomen to fiber-tempered ceramics from the Beaufort, South Carolina, area establishing a relatedness, almost an equivalence between the ceramics of the Stalling's Island and coastal Chester Field sites. He reiterated this point in a subsequent paper defining the Orange ceramic types of Florida (1945).

The attempts to check unwarranted creation of ceramic types resulted in the inclusion of all fiber-tempered ceramics in one of three regional categories. This scheme was formalized by Sears and Griffin in 1950.

Regardless of any consideration of attributes other than ceramic ones, ceramics were identified on the basis of the geographical location of the find. That is, if the ceramics were excavated in Florida, they belonged to the Orange Series; in Alabama and Tennessee to the Wheeler Series; in Georgia to the Stalling's Island Series.

It was not until the Bilbo site excavations that Waring began to have second thoughts (ca. 1940). He then devised a Bilbo period chronology which he introduced in a paper written around 1952 (1955-60: 253-255). Williams (1968) lists the report of the Sapelo Island shell ring excavation as being written between 1955 and 1960. In this report (1955-60: 265-280), Waring adhered to the St. Simon's type with no mention of Bilbo classification. More recently, Crusoe and DePratter (n.d.) have redefined the Bilbo chronology and urged its usage. Crusoe (n.d.) in a paper written subsequently proposes a four-fold classification returning to the Stalling's nomen and articulating with Bullen's (1954) five-fold Orange period classification.

Since 1940, the status of excavations and particularly analysis of sites on the Georgia coast has been that of very little public communication. This is especially true for fiber-tempered sites. Excavations have consisted of small tests with interest continuing in a ceramics-to-chronology orientation. No adequate site survey of the Georgia coast has been done during this time. The situation in 1975 is not appreciably improved.

Proposal of a new typology, adherence to an old one, or consolidation of several is not intended here. Coastal sites are significant in more meaningful ways than ceramic motifs or attributes of ceramic manufacture. Milanich (1971) takes a refreshing direction in proposing a Coastal

Tradition based on subsistence strategy, total artifact inventories, and settlement type within a frame of radiocarbon dates. This is one of the first attempts to understand cultural developments on the coast in terms of a lifestyle and not in terms of viewing the people as possessors of distinct artifacts.

The greatest problem to researchers is the absence of a systematic body of data from excavated sites in either riverine or coastal environments. As many times as the Stalling's Island site has been excavated or tested, interest in this site is primarily that of its unique ceramics or ceramic change (Claflin 1931, Bullen and Greene 1970, Crusoe and DePratter n.d.). The notable exception is Fairbanks' (1942) assessment of the cultural traits represented by excavation findings. Too often, discussions of subsistence strategy in archaeological reports are obviously based on impression and not the result of analysis of food remains. Riverine information is augmented somewhat by Miller's (1949) Lake Spring site report and the paper by Phelps and Burgess (1964) on the White Mound.

The state of information reflects insufficient analysis and publication upon which to build a coherent structure of chronology or ceramic typology. Until this data base is available, a moratorium on further classification and categorization is urged to allow objective and impartial collection of information. This should not be construed to propose information gathering today and theorizing tomorrow. Rather it is recognition that the framework within which the Late Archaic situation in Georgia, as now perceived, is insufficient support. It is additionally a recognition that the quality of the Cannon's Point collections precludes their comparison with any extant collection. For these reasons, no new scheme will be offered.

Before interpretive presentations of human development in the Georgia coastal area are made, prehistorians must be willing to investigate the adaptation as a totality, not one or two traits.

A portion of this study is a contribution to such a data base. Ceramics have been a major concern for archaeologists since their unique ability to reflect cultural development was recognized. To this end, a ceramic analysis is provided for each excavation unit giving level distribution and totals. Many recovered decorated sherds are illustrated with their respective proveniences. Illustrations of decorated ceramics and rim forms may be found in Appendix 3 (sherds having Orange series motifs) and Appendix 6. Additionally, distribution by level is provided in Appendix 7. Illustrations of grit-tempered ceramics are included as Appendix 8.

Ceramic fragments recovered from excavation units in the ring sites were overwhelmingly fiber-tempered. Table 6 lists the distribution of fiber-tempered and grit-tempered sherds for both ring sites. Table 7 lists ceramic distribution for each excavation unit in the marsh. Table 8 presents totals of ceramic material recovered from the three contexts. It should be mentioned that fiber-tempered sherds tend to fragment upon removal from the midden and as a result of excavation trauma. A sherd is here defined as a ceramic fragment having both an interior and an exterior surface intact. A paste fragment is defined as any ceramic fragment lacking either one or both surfaces. Such a distinction reduces sherd counts appreciably but is felt to be more representative of the material reocvered. Weights are included to provide an indication of paste fragment contribution to the total ceramic sample.

Table 6: Ceramic Distribution for Ring Sites (9GN57, 9GN76).

Provenience	Fiber-tempered Sherds						Grit-tempered Sherds					
	Plain	Decorated	Body	Rim	Total	Weight	Plain	Decorated	Body	Rim	Total	Weight
9GN57												
□6S,15E	169	25	156	38	194	3696.2 g	1		1		1	2.0 g
□9S,15E	64	4	59	9	68	948.3 g						
□18N,0E	231	8	225	14	239	3274.9 g	2		2		2	11.5 g
□18N,3E	79	4	67	16	83	1831.0 g	3		3		3	8.1 g
□0N,15E	2		2		2	67.3 g		3	2	1	3	20.0 g
□3N,15E												
□30N,15E	4		3	1	4	106.5 g						
□6N,8E	28		28		28	184.1 g						
□19.5N,2W	21		20	1	21	333.3 g						
9 Units	598	41	560	79	639	10441.6 g	6	3	8	1	9	41.6 g
9GN76												
Test 1	45	2	44	3	47	808.9 g	17	5	22		22	69.9 g
□5S,30E	33	12	34	11	45	687.0 g	2	1	3		3	3.5 g
2 Units	78	14	78	14	92	1495.9 g	19	6	25		25	73.4 g

Table 7: Marsh Ceramic Distribution.

Provenience	Fiber-tempered Sherds						Grit-tempered Sherds					
	Plain	Decorated	Body	Rim	Total	Weight	Plain	Decorated	Body	Rim	Total	Weight
□ 27S,21E							1		1		1	5.0 g
□ 27S,18E	4		4		4	295.8 g	9	3	9	3	12	146.1 g
□ 41N,12E	5		3	2	5	283.5 g	1			1	1	15.3 g
□ 56N,12E	3		2	1	3	115.0 g						
□ 80N,12E	1	1	2		2	79.2 g						
□ 45S,15E	1		1		1	62.9 g						
□ 42S,24W	30	13	34	9	43	395.6 g	31	44	70	5	75	271.4 g
□ 24S,24E	13	1	11	3	14	312.4 g	13	2	13	2	15	130.6 g
□ 30S,12W	44	5	39	10	49	756.7 g	25	9	32	2	34	199.1 g
□ 30S,3W	33	2	32	3	35	626.4 g	16	5	17	4	21	224.9 g
□ 15S,6W	41	5	44	2	46	671.9 g	9		7	2	9	86.0 g
□ 33S,12E	103		94	9	103	1593.7 g	85	12	87	10	97	700.8 g
□ 33S,15E	11		11		11	382.2 g	44	5	39	10	49	364.2 g
13 Units	289	27	277	39	316	5293.1 g	234	80	275	39	314	2143.4 g

Table 8: 9GN57 and 9GN76 Total Recovered Ceramic Material.

Provenience	Total Sherds	Total Weight	Paste Fragments(ft)	Weight	Paste Fragments(gt)	Weight	Total Paste Fragments	Total Weight	Total Ceramic Weight
□ 27S,21E	1	5.0 g							
□ 27S,18E	16	541.9 g	1	3.4 g			1	3.4 g	545.3 g
□ 41N,12E	6	298.8 g	9	34.8 g			9	34.8 g	333.6 g
□ 56N,12E	3	115.0 g							
□ 80N,12E	2	79.2 g							
□ 45S,15E	1	62.9 g	1	6.8 g			1	6.8 g	69.7 g
□42S,24W	118	667.0 g	55	108.9 g	16	24.9 g	71	133.8 g	800.8 g
□24S,24E	29	443.0 g							
□ 30S,12W	83	955.8 g	54	187.0 g	6	5.4 g	60	192.4 g	1148.2 g
□30S,3W	56	851.3 g	22	66.4 g	6	11.1 g	28	77.5 g	928.8 g
□15S,6W	55	757.9 g	80	66.5 g	3	6.1 g	83	72.6 g	830.5 g
□33S,12E	200	2294.5 g	67	162.8 g	8	5.7 g	75	168.5 g	2463.0 g
□33S,15E	60	746.4 g			1	1.0 g	1	1.0 g	747.4 g
□6S,15E	195	3698.2 g	818	525.1 g			818	525.1 g	4223.3 g
□9S,15E	68	948.3 g	264	262.2 g			264	262.2 g	1210.5 g

Table 8 - Continued.

Provenience	Total Sherds	Total Weight	Paste Fragments (ft)	Weight	Paste Fragments (gt)	Weight	Total Paste Fragments	Total Weight	Total Ceramic Weight
□18N,0E	241	3286.4 g	970	407.9 g			970	407.9 g	3694.3 g
□18N,3E	86	1831.9 g	621	234.3 g			621	234.3 g	2066.2 g
□0N,15E	5	87.3 g	8	22.7 g			8	22.7 g	110.0 g
□3N,15E			1	2.0 g			1	2.0 g	2.0 g
□30N,3E	4	106.5 g	78	41.6 g	1	2.2 g	79	43.8 g	149.8 g
□6N,8E	28	184.1 g	36	33.8 g			36	33.8 g	217.9 g
□19.5N,2W	21	333.3 g	30	70.1 g			30	70.1 g	403.4 g
Test 1	69	878.8 g	98	102.2 g	9	8.6 g	107	110.8 g	981.0 g
□5S,30E	48	690.5 g	363	194.4 g			363	194.4 g	884.9 g
24 Units	1395	19864.0 g	3576	2532.9 g	50	57.0 g	3626	2597.9 g	21820.6 g

Several observations regarding the ceramic collection from the Cannon's Point Late Archaic sites are pertinent. The term fiber-tempered is used to designate those sherds in which vegetal paste inclusions have resulted in post-firing vermiculation and channeling. Grit-tempering (grit in the form of visible quartz inclusions) is present in all ceramics that are not fiber-tempered. While fiber-tempered sherds excavated in Georgia should be typed Stallings, the situation for grit-tempered sherds is either simple stamped or cross-simple stamped (Appendix 8). Radiocarbon dates (820-835 BC) place these ceramics within the Refuge Phase (ca. 1100-600 BC) as defined by Peterson (1970: 76-81).

Waring (1968: 198-208) first described this phase after excavating the Refuge site, a shell midden located on a tributary of the Savannah River in South Carolina. Distinction between Refuge and the later Deptford phase was based on ceramic attributes. A coarser, thicker paste is reported for Refuge sherds. This phase is best known from the Savannah River drainage and its coastal affiliations are not clear. Peterson (1970: 76-81) notes a distinct change in environmental usage in terms of exploited resources and area of habitation. This information comes from the excavations headed by Stoltman at Groton Plantation, Allendale County, South Carolina. Peterson contends that Refuge sites are situated in the uplands. When the swamps are used, occupation is not associated with mollusc gathering since Refuge phase sites on Groton Plantation yield no molluscan debris.

In the Cannon's Point project area, the marsh cultural level similarly reflects no mollusc association. It is true that in this cultural level, the majority of grit-tempered sherds were recovered in association with fiber-tempered sherds, but it is in the latter sherds that an interesting

change is noted. In the fiber-tempered sherds from the ring sites, only an occasional grit inclusion is observed. Fiber-tempered sherds from the marsh cultural level, however, evidence a very high frequency of grit inclusions. The tempering of the grit-tempered sherds from this provenience were admittedly coarse, but assignment to a Refuge type may be premature. As Stoltman observes (1974: 22) Waring's Refuge typology was subjectively developed and may not be accurately reproduced by another investigator. Perhaps the event occurring in the marsh cultural level is one of development from predominantly fiber-tempered to grit-tempered types--a pre-check stamped Deptford situation. Unlike fiber-tempered ceramics, coil fracturing is frequently observed on these grit-tempered sherds. Ceramic decorations continue to be distinct, however. No incised or punctated motifs appear on grit-tempered sherds: no stamping is present on fiber-tempered sherds. Decorative motifs on fiber-tempered ceramics from St. Simon's Island shell ring sites are highly variable. The typical Stallings motif, linear punctation, does not occur in this sample and is generally not a common coastal decoration.

Waring (1955: 219) notes that Orange Incised, a Florida type, appears to extend as far north as St. Simon's Island, Georgia. Excavations in both ring sites substantiate this point (Appendix 3). Of particular interest are sherds from the West Ring, particularly proveniences 59, 62, and 67. These sherds are nearly identical to Griffin's (1945) examples of Tick Island Incised (see Griffin's Figures D-1). The sherds are from basal levels of the east arc of the midden (the basal levels of the west arc are dated at ca. 1910 BC). In the Marsh Ring, sherds having Orange motifs are from the south arc excavations units and were recovered in the first three levels.

As the ceramic tabulation shows, no support for a plain fiber-tempered ceramic horizon is provided. Decorated ceramics are found beneath the midden as well as within it. It is interesting to note that no decorated sherds were recovered on the north ring arc until almost one meter of midden had been removed. On the south arc, decorated ceramics were very superficial.

Bone/Antler

Cultural items made of bone were far more common than those of antler. A sizeable sample of worked bone was recovered, the majority small fragments. Only three examples of utilized antler were identified. Much of the antler recovered from marsh proveniences could not be verified as utilized because of its poor state of preservation. All examples of worked bone appear to be made of fragments of larger bones. Some may be specifically identified as constructed from the metapodials of white-tailed deer. A catalog of worked bone and antler is provided in Appendix 9; illustrations of selected examples follow in Appendix 10.

Three basic categories of worked bone are exemplified: awls, points, and pins. Awls are defined as pointed, tapered implements having an expanded base. Frequently a constriction or grooving is observed at the base. Seven examples were recovered. Only two points were identified, one of bone and the other of antler. Points are characterized by short length and are cylindrical but tapered in cross-section having a constricted base. Bone pins have been one of the most characteristic artifacts from fiber-tempered sites. Pins are constructed of split fragments of deer metapodial. Specimens are limited in length to the length of the metapodial. In the Cannon's Point collections, length from base (or head) to point is 12 to 16 cm. Fragments were rounded, apparently by abrasion,

and a high polish is usual. It is uncertain if the polish is a result of abrasion in manufacture or from usage. Nine examples were recovered. In addition, many of the worked bone fragments are parts of pin shafts and points. The application of decorative motifs was limited to this category. The most common design (#342) observed was a zoned triangular or diamond incised motif. Two examples of the scroll designs of the Bilbo type bone pins described by Waring (1940: 170-171) are included in this collection. One is rectilinear (#776) and the other gives a hint of a curvilinear design (#817a).

Worked bone was recovered as a midden inclusion with more frequency than in features. In Features #19 and #21 (a highly cemented hearth extending through the shared baulk), one awl, a broken pin tip, and one decorated shaft fragment were retrieved. In Feature #20, another probable hearth which lacked the consolidation of shells observed in Feature #19 and #21, most of a pin was recovered. In contrast, Feature #18 which consistently yielded large quantities of fauna, produced only a fragment of utilized turtle.

The elaborately engraved bone pin fragment (#776) was exposed below the midden and its impression was visible in the submidden soil. Provenience and Waring's criteria suggest a later date for these sites. The radiocarbon dates, instead of supporting elaborately decorated bone pins as a later development, suggest that in the Cannon's Point area this artifact has a much earlier date.

One additional type of worked bone was frequently observed. In the catalog, it comprises over 50% of the recovered examples. The carapace of specific turtles evidences internal scraping which removed the vertebral attachments on the neurals and exposed the cancellous structure of

the pleurals and marginals. The carapace is cut from the plastron through the bridge marginals apparently to allow removal of edible meat. This cut area usually shows considerable polish. Such treatment of turtle carapace is consistently seen on Deirochelys reticularia, Chrysemys cf. floridana, and Malaclemys terrapin. These species have frenulated exteriors, a fact that apparently was culturally valued. That they are the largest turtles locally available is another observation which must be included. Because scraping increases the porosity of the shell, it would seem that items intended to be contained within (if in fact the shell was used as a container) were dry instead of liquid.

Lithics

Culturally altered lithic material recovered from the marsh ring consisted of three examples. The location of each item is particularly interesting. A granitic hone was recovered in Feature #19 associated with a bone awl. In the submidden soil of the southern half of □18N, 3E, a chert projectile point was recovered. This point, illustrated in Appendix II, is not a typical Savannah River Stemmed point, rather it is reminiscent of a Florida Arredondo point typologically (Bullen 1975). The third specimen is a stemmed, bifacially worked object excavated from a pit adjacent to Feature #12. The specimen is of chert and appears to have been repeatedly retouched. Its function may have been as a knife or scraper.

During this time period, coastal sites have consistently produced few lithic artifacts. The small inventory discussed above was expected. Debris from tool-making or retouching was similarly meager, suggesting that lithic items were brought to the coastal area as finished products.

No cores or preforms were recovered. A small number of chert flakes were retrieved from the West Ring but no lithic artifacts. Quartz pebbles were more frequently recovered, particularly in the basal levels.

The marsh cultural level presented a very different picture. Six lithic artifacts were excavated in units south of the marsh ring. Flint was black or bluish in color in contrast to the white specimens from the marsh ring. Debitage was present in greater frequency than the few chips recovered in the ring sites. It is probable that screening would have produced additional specimens.

From the scarcity of lithic material in the ring sites and the greater frequencies in the marsh cultural level, it seems apparent that lithic availability in the coastal area increased with time. The change in color is interesting also. Black flint outcrops have been reported from the Fall Line but not from the coastal plain.

Shell

Definition of this class of artifacts if particularly problemmatical. Certainly any shell is a potential tool but conditions of preservation may obscure evidence of use. Clarification of criteria used for classification of shell tools was required as field work progressed. A mollusc shell was considered utilized if non-naturally occurring alterations were observed. These alterations could be evidence of use as food rather than tool use. Additionally, it was anticipated that some specimens would evidence both food and tool use modification.

Gastropods were the most commonly excavated mollusc class exhibiting consistent alterations. Such molluscs can be removed from their shells by pulling the animal out by its foot. Perforation of the shell provides

access to the muscle attachments, which when cut makes removal possible. Holes in the shoulder of the shell or absent spires were considered alterations for food use. The criteria for tool use were based on alterations of the umbilical area (base) and lip edge (at the shell opening). Blunting of the base, angular wear resulting in basal pointing, and lip edge wear were the most consistently observed alterations.

Two gastropods were commonly recovered from the midden with such modifications: Busycon carica and Busycon carica eliceans. The former seemed to repeatedly exhibit modification for food use, the latter for tool and food use. Busycon carica is a thin-shelled species; Busycon carica eliceans is a more robust species. Some of the archaeological specimens had segments of shell removed exposing the columella. Such detachment produces sections of shell which can be used for manufacture of other itesm (e.g. beads).

Bivalves were the most numerous midden inclusion, but evidence of food or tool alteration was not as obvious. A single example of utilized oyster, modified by the removal of a circular section from the valve body was recovered. Use is not known. In the West Ring, a clam shell (Mercenaria sp.) with the umbo (hinge) removed and exhibiting considerable edge wear of this area was retrieved. The specimen may have served as a dipper or scoop.

Single shells were generally encountered during excavation but occasionally clumps of shells were observed, but these plus crustaceans (usually barnacles) were not sizeable nor was their location repetitive. Many Busycons were excavated with internally adhering oyster growth indicating that the initial reason for collecting this specimen was not for food. Since these specimens usually exhibited no modification from tool use, the choice of these shells remains a question. Such gathering practices seem to suggest

a lack of discrimination in the selection of potential foodstuffs. Perhaps the location of the habitation area was near enough to the source to compensate for the waste of energy represented by transportation of inedible mollusc shells. Another suggestion of the proximity of mollusc sources to the habitation area is offered by one specimen which was initially a tool then discarded in water and subsequently regathered with adhering immature oyster growth (Appendix 12, #568). This specimen demonstrates immature oyster growth over edge wear and removal of the lip. On the other hand, the functions of shell tools may have included activities done on or near the water with loss of this specimen being a predictable consequence of use.

Clams frequently exhibited exterior shell removal near the umbo. Perforation did not occur but an inner layer of shell was exposed. A blow to loosen the hinge and facilitate extraction of the mollusc is a probable cause. Small concave areas of shell are frequently observed to be absent from the lip of the clam suggesting that prying may have been attempted. Most clams evidences neither lip nor umbo alteration. Appendix 12 catalogs the utilized shell from both ring sites and includes photographs of selected specimens.

Faunal Materials

Molluscan resources represent such an obvious contribution to the subsistence base of Late Archaic peoples that the perception of coastal-dwelling groups as "oyster eaters" inevitably developed. Unfortunately, little else was considered. Identification and enumeration of faunal remains from the Cannon's Point sites indicates that it is more realistic to perceive coastal inhabitants during this time period as participants

in a procurement system in which the tidal creek and the surrounding marsh were critical sources of food. However, a discussion of molluscs is appropriate to initiate any consideration of Late Archaic subsistence.

While oysters are obviously the dominant species present, many other molluscs occur as midden inclusions in significant quantities. All too frequently, this fact has been overlooked. As noted previously, some species combined subsistence and technological functions. A list of the molluscs excavated from the ring sites is presented in Table 9 (identification is based on Abbott 1974 and Burch 1962). It is apparent that mollusc habitat varies greatly. Oysters, clams, whelks, stout tagelus (Tagelus plebius), and mussels (Geukensia demissa) made the greatest food contribution. Marsh periwinkles seem to have been more important in the West Ring while the subsistence role of marsh snails (Ilyanassa obsoleta, Melampus bidentatus), oyster drill (Urosalpinx cinerea), and others is less certain. These species may have been gathered with other resources representing incidental inclusion in the midden. Carnivorous terrestrial snails seem to have been drawn in very large numbers to the decaying midden debris. There is no evidence that these may have been utilized.

Table 10 presents a composite faunal list for each ring site and the marsh cultural level. Taxonomy is based on the following sources: fishes - Bailey et al. 1970; amphibians and reptiles - Conant 1975; birds - Peterson 1947; Robbins et al. 1966; mammals - Burt and Grossenheider 1964, Golley 1962. The diversity of faunal species identified is remarkable. Species lists for each excavation unit and a level-by-level assessment of the faunal material is available in Appendix 5. From these tabulations, it is evident that vertebrate fauna is critically important to aboriginal subsistence. This point is clearly supported when a dietary assessment of available data for molluscs

Table 9: Composite Molluscan Species List, 9GN57 and 9GN76

Species	Common Name	Habitat
Stenotrema fraterna (Pillsbry)	land snail	floodplains, forested habitats
Triodopsis hopetownensis (Shuttleworth)	land snail	floodplains, lowlands
Polygyra cereolus (Muller)	land snail	marsh edge
Euglandina rosea (Ferrusac)	land snail	warmer subtropical and temperate climate, lowland areas, damp habitats
Haplotrema concava (Say)	land snail	lowland floodplains, damp vegetation
Mesomphix vulgatus Baker	land snail	floodplains, lowlands, forests
Melampus bidentatus (Say)	marine snail	brackish marshes
Detracea floridana (Gmelin)	marine snail	brackish marshes
Neritina reclivata (Say)	marine snail	brackish marshes
Polynices duplicata (Linn.)	moon snail	shallow-water sand bottoms
Littorina irrorata (Linn.)	common periwinkle	brackish water marshes on weeds
Busycon carica (Gmelin)	knobbed whelk	shore to 30 feet
Busycon carica elliceans (Montfort)	Keiner's whelk	shore to 30 feet
Busycon canaliculatum (Linn.)	channeled whelk	in sand; 3-50 feet
Ilyanassa obsoleta (Say)	eastern mud nassa	in muddy intertidal flats, salt marshes

Table 9 - Continued.

Species	Common Name	Habitat
Urosalpinx cinerea (Say)	Atlantic oyster drill	oyster bars; low tide mark to 25 feet
Eupleura caudata (Say)	thick-lipped drill	oyster bars
Terrebra sp.	auger shells	muddy and sandy bottoms
Odontostoma sp.	snail	oyster bars
Limopsis sp.	clam	mud bottoms
Anadara ovalis (Bruguiere)	blood ark	6-100 feet
Tagelus plebius (Lightfoot)	stout tagelus	in sandy mud, intertidal
Mercenaria mercenaria (Linn.)	northern quahob clam	2-40 feet
Mercenaria campechiensis (Gmelin)	southern quahob clam	in sand, 3-50 feet
Dinocardium robustum (Lightfoot)	giant Atlantic cockle	3-100 feet
Crassostrea virginica (Gmelin)	eastern oyster	estuaries, tidal creeks
Geukensia demissa (Dillwyn)	Atlantic ribbed mussel	marshes, intertidal
Crytopleura costata (Linn.)	angel wing	colonies in mud and clay

Table 10: Faunal List.

Fauna	9GN57	9GN76	Marsh Cultural Level
CRUSTACEA			
Decapoda[1]	x	x	
Callinectes sp.	x	x	
CHONDRICHTHYS			
Carcharhinidae[1]	x		
Galeocerdo cuvieri	x		
Sphyrnidae			
Sphyrna sp.	x	x	
Rajiformes[1]	x	x	
Dasyatis sp.	x		
Aetobates narinari	x		
OSTEICHTHYS			
Lepisosteus sp.	x	x	x
Amia calva	x		x
Elops saurus	x	x	
Clupeidae[1]	x	x	
Brevoortia sp.	x		
Siluriformes[1]	x		
Ictalurus sp.	x		
Ariidae[1]	x	x	x
Arius felis	x	x	
Bagre marinus	x	x	x
Micropterus sp.	x		
Opsanus sp.	x	x	
Pomatomus saltatrix	x		
Carangidae[1]	x	x	
Sparidae[1]	x		
Lagodon sp.	x		
Archosargus sp.	x	x	x
Sciaenidae[1]	x	x	x
Bairdiella chrysura	x	x	
Cynoscion sp.	x	x	
Leiostomus xanthurus	x	x	
Menticirrhus americanus	x		

Table 10: Faunal List. (Continued)

Fauna	9GN57	9GN76	Marsh Cultural Level
Micropogon undulatus	x	x	x
Pogonias cromis	x	x	x
Sciaenops ocellata	x	x	x
Stellifer lanceolatus	x	x	
Mugil sp.	x	x	x
Prionotus sp.	x		
Paralichthys sp.	x	x	x
AMPHIBIA			
Siren sp.	x		
REPTILIA			
Chelydra serpentina			x
Kinosternon sp.	x	x	x
Terrapene carolina			x
Malaclemys terrapin	x	x	x
Chrysemys sp.	x	x	x
Chrysemys cf. *floridana*	x		
Deirochelys reticularia	x		x
Alligator mississipiensis			x
Iguanidae[1]	x		
Anolis carolinensis	x		
Natrix sp.	x		
Coluber constrictor	x		
Lampropeltis sp.	x		
AVES			
Phalacocorax auritus auritus	x		
Ardea herodias wardi	x		
Bucephala clangula	x		
Buteo lineatus alleni	x		
Rallidae[1]			
Larus argenticus	x		

Table 10: Faunal List (Continued)

Fauna	9GN57	9GN76	Marsh Cultural Level
MAMMALIA			
Didelphis virginiana	x	x	x
Soricidae[1]	x	x	
Cryptotis parva	x		
Blarina brevicauda	x	x	
Scalopus aquaticus		x	
Sylvilagus sp.	x	x	x
Rodentia[1]	x	x	x
Glaucomys volans	x		
Sciurus carolinensis	x		
Microtinae cf. *Neofiber*		x	
Neofiber alleni		x	
cf. *Neotoma*	x		
cf. *Peromyscus*	x	x	
Oryzomys sp.	x		
Peromyscus sp.	x		
Sigmodon hispidus	x	x	
Lutra canadensis	x		
Mustela vison	x		
Canis familiaris	x	x	x
Procyon lotor	x	x	x
Odocoileus virginianus	x	x	x
Homo sapiens	x		x

[1] indicates elements only identified to this level.

and several vertebrate species is made. Table 11 documents the fact that crustaceans and vertebrate fauna comprise a more significant contribution by weight than molluscan fauna.

With a few notable exceptions, all fishes identified are marine and inhabit the tidal creek biotope. The exceptions are freshwater catfish (Ictalurus sp.), bowfin or mudfish (Amia calva), and bass (Micropterus sp.). All usually inhabit freshwater biotopes but may enter brackish waters. They are represented in the faunal collection by a very small number of fragments. Their presence in these sites may indicate a change in the local habitat. It is possible that these species were resident in semi-permanent ponds on the island. Such standing water as is present on the island today depends upon rainfall and is generally scarce. Freshwater catfish are taken today in marine habitats when unusually high freshwater run-offs occur. These run-offs may be caused by increased rainfall over a period of time or by storms. A similar situation occurring prehistorically may account for the presence of these species. Additionally, freshwater turtles were recovered from most excavation units.

The tidal creek biotope constantly fluctuates with tidal condition. At periods of high tide, the tidal creek expands vastly. Conversely, at periods of low tide, the marshes extend for miles. Many mammalian species other than man depend upon the marshes and tidal creeks for their maintenance. Crabs (particularly of the genus Uca - fiddlers) constitute a staple item in the diet of island raccoons. Deer and rabbits (Sylvilagus sp.) include marsh grasses in their diets. Otter and mink, both semi-aquatic mammals, prey on numerous species present in these biotopes. Many avian species are permanent residents of the area, others are seasonal. While the majority of avian

Table 11: Dietary Contributions of Selected Species (Watt and Merrill 1963)
(100 grams of edible portion)

	% Water	Calories	Protein gms	Fat gms	Carbohydrate gms	Fiber gms	Ash gms	Calcium mgm	Phosphorus mgm	Iron mgm	Potassium mgm	Sodium mgm	Vitamin A[1]	Thiamin mgm	Riboflavin mgm	Niacin mgm	Ascorbic Acid mgm
Eastern oyster, raw	84.6	66	8.4	1.8	3.4		1.8	94	143	5.5	121	73	310	.14	.18	2.5	
Atlantic mussels, meat+liquid raw	83.8	66	9.6	1.4	3.1		2.1										
Clams, hard	86.2	49	6.5	.4	4.2		2.7		175						.13		
Menhaden, canned	67.9	172	18.7	10.2			3.8			1.3							
Croaker, Atlantic																	
raw	79.2	96	17.8	2.2			1.3				234	87	60	.12	.08	5.5	
baked	71.3	133	24.3	3.2			1.2				323	120	70	.13	.10	6.5	
Drum(redfish) raw	80.2	80	18.0	0.4			1.3				273	55		.15	.05	3.5	
Spot raw	65.3	219	17.6	15.9			1.2					61		.16	.22		
Crab steamed	78.5	93	17.3	1.9	.5		1.8	43	175	0.8			2,170	.16	.08	2.8	2
Rabbit raw	73.0	135	21.0	5.0			1.0										
Deer venison raw	74.0	126	21.0	4.0			1.0	10	249					.23	.48	.63	

Table 11 - Continued.

	% Water	Calories	Protein gms	Fat gms	Carbohydrate gms	Fiber gms	Ash gms	Calcium mgm	Phosphorus mgm	Iron mgm	Potassium mgm	Sodium mgm	Vitamin A[1]	Thiamin mgm	Riboflavin mgm	Niacin mgm	Ascorbic Acid mgm
Opossum roasted	57.3	221	30.2	10.2			2.3							.12	.38		

[1] International units.

pecies identified from the collections are permanent residents, one migratory species is present (American golden-eye).

Two species identified are not present-day residents of the area. Aetobates narinari (spotted eagle ray) is not reported for the Georgia coast (Dahlberg 1975: 31). Similarly, the present distribution of Neofiber alleni (Florida water rat) does not include the Georgia coast (Burt and Grossenheider 1964: 200-202).

Several species are particularly important in the faunal sample: blue crab (Callinectes sp.), menhaden (Clupeidae cf. Brevoortia), marine catfish (Ariidae), members of the drum family (Sciaenidae), and mullet (Mugil sp.). The majority of individuals in the sample are represented by these species. Mammalian species contribute a greater amount of edible meat by weight than fish or crabs but are not present in large numbers in the collections. It is obvious from the areas tested that mollusc gathering was augmented largely by fishing.

Amphibian fauna is represented by only one genus, Siren. In general, amphibian remains were so tiny that adequate collections were not available for positive identification. Consequently most of the recovered amphibian fauna is listed as unidentified. Reptilian fauna, particularly snake vertebrae, presented a comparable problem. The condition of erosion and fragmentation of the elements makes the identification of snakes very tentative. Turtles were well represented. It is interesting to note that turtles in the marsh cultural level included two species not present in the ring sites: Chelydra serpentina and Terrapene carolina. Chelydra serpentina was present in considerable quantity. One fragment of alligator was recovered from the marsh cultural level. This was the only example of this reptile retrieved.

Many species may represent incidental inclusions rather than food remains. Some of these are flying squirrel, mole, shrews, green anole (chameleon), and several species of rats. Regardless of their function, the presence of these small animals add considerable information about the prehistoric environment.

The role of the dog is uncertain. Dog remains occurred in the midden as any other food remains might have been observed. One partial maxilla was recovered in Feature #19. Its cracked and burned condition suggests that whatever the premortem function of the dog, its postmortem role included human consumption. It is interesting to note that no teeth were recovered with the maxilla or in the feature. While dog teeth are frequently recovered drilled for stringing, no evidence of this practice was observed. Dog remains were recovered at each of the locations.

The marsh cultural level evidences an increased incidence of use of turtle and deer. As previously mentioned, no molluscan remains were associated with any of the faunal or cultural material exposed beneath the present marsh surface. This absence suggests several hypothetical answers: a decreased abundance of molluscs, a culturally motivated subsistence change, differential use of the area (i.e. not for mollusc harvesting), or differential preservation of bone and shell beneath the marsh. At this time, adequate support for any of these hypotheses is lacking.

Floral Remains

Regardless of the reports of previous investigators, floral material is a midden inclusion and may be retrieved using screened samples. Floral remains were recovered as seeds, nutshells, and carbonized nuts (particularly acorn). A tentative floral list is provided in Table 12 with additional plotting of the seasonal availability of the edible parts of the plant.

Table 12: Seasonal Availability of Identified Flora.

Species	Month J F M A M J J A S O N D	Comments	Common Name
Pinus spp.		shed seeds	Pine
Juniperus spp.		mature berries	Red cedar
Carya spp.		mature nuts	Hickory
Quercus spp.		mature acorns	Oak
Celtis spp.		berries may persist through winter	Hackberry
Prunus serotina		mature fruit	Black berry
Ilex vomitoria		leaves available year 'round	Yaupon
Bumelia lycoides (L.) Gaertn		fruit available	Buckthorn
Foresteiera spp.		fruit available	Swamp privet
Vitus spp.		fruit available	Grape
Brassica spp.		tentative	Mustards

Pinus is not present in the sample in any quantity. Juniperus spp. is presently the dominant cover of the marsh ring and present on the West Ring. In the marsh cultural level, juniper roots were exposed. Identification was based on the characteristically red inner coloration and odor. Quercus spp. was moderately abundant. Carya spp. was the most numerically abundant nutshell. Considerable quantities were recovered throughout the midden with a significant increase in the submidden soil. It was not possible to determine whether these fragments were burned or carbonized. An increased frequency of Carya was noted in Feature #18, #24, and #25. Celtis spp. is second to Carya in abundance. Its frequency is particularly high in Features #19, #20, and #21. There seems to be some correlation between the occurrence of Celtis and areas identified as probable hearths. Celtis is also abundant in the general levels throughout the midden. Prunus serotina, Ilex vomitoria, Bumelia lyciodes, and Forestiera sp. are not present in any quantity. It should be remembered that the leaves of Ilex vomitoria are known to have been used aboriginally for ceremonial drinks (Swanton 1946: 699).

In general, the floral species identified still grow in the area. Brassica spp. has been tentatively identified but is not common. This species represents an introduction from Eurasia or Africa (Small 1933: 562). Level-by-level species identification is provided in Appendix 13 for the West Ring.

Other Analyses

Soil

Soil samples were taken whenever a feature was designated or an area of unusual color or texture appeared. Additionally, a stratified sample was taken from marsh unit □45S, 15E for comparative analysis. The question

of amount of carbonate resorption taking place was felt to be critical to problems of differential preservation of shell and bone. Because marsh periwinkle and Atlantic ribbed mussels were noted in marsh excavations in a state of decay, comparative analyses were required to check the carbonate levels. The samples were submitted to the Institute of Food and Agricultural Sciences Soil Sciences Laboratory at the University of Florida. Unfortunately, the tabulations were misplaced, and the only results which are available concern pH values. These values are listed below and indicate an alkaline environment, a condition already suspected in view of the excellent bone preservation.

Soil Sample #	Depth below Surface	pH value	Associations
59	0-18 cm	7.4	Spartina growth heavy
60	31-43 cm	7.6	Spartina rootlets present but growth not thick
61	70-80 cm	7.3	Corresponds to level of cultural and subsistence materials
62	120 cm	7.5	Below the cultural level

Pollen

Samples for pollen analysis were taken, particularly from the marsh excavation units. Initial processing of these samples in the Florida State Museum Paleoecology Lab revealed extensive Spartina contamination. Consequently, the samples were of little value. One would question the value of pollen samples in an area at the mouth of a river in any event. Much of the pollen deposition may include water-borne pollens from non-local areas.

Human Osteology

Although four of six excavation units in the marsh ring produced some human skeletal material, the total inventory is small. Table 13 summarizes this material. Skeletal material recovered was fragmentary but generally gave the impression of being crushed in place. Because cannibalism had been hypothesized to explain the fragmentary nature of previous finds of human skeletal material in shell ring sites, much care was taken to observe supporting information. However, no solid evidence of cannibalism is offered by this collection. Admittedly, some of the bones have articular surfaces missing but this could be caused by the manner in which the skeletal element became a part of the midden.

The inclusion of non-articulated skeletal material in the midden presents a puzzle. It is possible that the lower levels of the ring were borrowed from shell heaps in which burials had been made. It is also possible that considerable shifting of the midden overburden through the years caused relocation of material and disarticulation. It may be that the burial practices of these people included exposure and that subsequent burial of the remaining bones was haphazard. No cultural items have been excavated in association with human skeletal remains.

The cranium and pelvis are probably from the same individual, a male aged 22-28 years, although their locations in the midden are some three meters diagonally distant. They are, however, from approximately the same level. The remaining material is enigmatic, particularly the right leg and foot from the south arc excavation units.

Consideration of Methods and Techniques

At this point, it seems appropriate to consider the methods and techniques applied during excavation since analysis points out the inconsistencies, pro-

Table 13: Human Skeletal Material

Provenience	Level	Element	Condition	Sex/Age
□9S,15E	2	femur, rt.	fragmented; distal articular surface included in sample but not attached. Proximal articular surface absent from below lesser trochanter. Sizeable portion of diaphysis intact.	-
□9S,15E	2	tibia, rt.	proximal epiphysis present in sample but not attached; sizeable portion of diaphysis intact. Distal articular surface absent.	-
□ 6S,15E	1	calcaneous, rt.	medially split; articular surfaces for talus present.	-
□6S,15E	8	molar	split with roots missing; extensive attrition evident.	
□18N,0E	31	cranium	frontal, parietals, temporals, small amount of occiptal present. Basal portions of occiptal absent and left side of maxilla. Right side of maxilla has one remaining molar (M_1) which evidences extensive attrition. M_3 is erupted. Abcess noted in premolar. Supraorbital torus present but not marked.	Male/in 20's
□18N,0E	East Baulk	pelvis	ilium and pubic symphysis present.	Male/22-28
□18N,3E	24	incisor	root absent; extensive attrition	-
□24S,24E	75-85 cm bs	parietals	badly eroded	-

or contributions of these aspects of excavation strategy. The methodology and techniques applied are responsible for generating the raw data which when analyzed, supports the observations made.

Screening

When an excavator makes a commitment to screening, several problems immediately arise. Time required for field processing is greatly increased. Material recovered similarly increases (depending on the site). The area that can be excavated with the time allowed may be lessened unless the crew is large. Time required for post-excavation analysis is lengthened. In a shell site, the amount of material to be processed when screening is used is phenomenal. Most of the excavator's time is not spent in the excavation unit but at the screen clearing shell debris and picking out the archaeologically significant material. Davidson (1964) notes many of the same problems and states:

> In almost all cases, the critical division seemed to lie between the 1/4 inch and 1/8 inch. Material retained by an 1/8 inch sieve was identifiable without difficulty. Objection to it lies in the great increase in time necessary for a very small increase in exactness. The material retained by the sieve was always less than 10% of the total weight of the sample and usually considerably less. (Davidson 1964: 155).

A very interesting comment on the amount of archaeologically significant material recovered from a shell ring excavation level is offered in Table 14. Calculations for this table were made possible by the fact that □6S, 15E was excavated during the last few days of the Winter Field Session. Time did not allow field processing of the material in the lower screen. Consequently, significant material was separated in the top screen and bagged (note first column); all material caught in the lower screen was bagged and processed at

Table 14: Contribution of Screening by Weight of Processed Material, n6S,15E[1]

Level 7

	Top screen (3/8x3/4 in.)		Lower screen (1/8 in.)		Lower screen Shell debris
Fauna	25.5 g	42.0%	35.5 g	58.0%	
Shell	22.1 g	78.9%	5.9 g	21.1%	11164.2 g
Flora	1.2 g	25.5%	3.5 g	74.5%	
Ceramics	615.9 g	96.9[2]%	19.5 g	3.1%	
Total weight	664.9 g		64.25 g		11164.2 g
Total weight lower screen			11228.45 g		
% of lower screen weight			.5%		99.5%

Level 8

	Top screen (3/8x3/4 in.)		Lower screen (1/8 in.)		Lower screen Shell debris
Fauna	63.5 g	36.7%	109.4g	63.3%	
Shell	130.2 g	96.3%	5.05 g	3.7%	7300.0 g
Flora	3.05 g	52.6%	2.75 g	47.4%	
Ceramics	975.6 g	99.9[2]%	0.8 g	0.1%	
Total weight	1172.35 g		118.0 g		7300.0 g
Total weight lower screen			7418.0 g		
% of lower screen weight			2%		98%

[1]Weights given represent the amount of material considered archaeologically significant. Shell debris represents discarded material. Weights given as "shell" here refer to terrestrial and marine molluscs recovered.

[2]Includes weight of potsherds excavated and mapped in place in the excavation unit.

the Florida State Museum (second column). Weighing of shell debris from the lower screen was thereby made possible.

Exception is taken to Davidson's comment that there is " . . . a very small increase in exactness" (1964: 155). Although the significance of numbers of individuals and species identified is not indicated by Table 14, reference to Appendix 2 shows the gain in information when the change from 3/4 x 3/8 inch screen is made. Additionally, note the lower three levels of □6S, 15E in Appendix 5 for an indication of the significance to faunal analysis of the change from 1/4 inch (Levels 1-6) to 1/8 inch screen (Levels 7-9).

One-eighth inch screen provided a floral sample and a very extensive faunal sample. Sampling for flotation analysis should be utilized and processed as excavation progresses to check the effectiveness of screening. Use of water with 1/8 inch screen aided in recognition, separation of sand and clay, and cut processing time. Water changes the color of some materials, particularly bone making it more highly visible. Caution should be used with water screening in sites where material has been in dry soils or has been allowed to dry prior to processing. Dry floral material literally disintegrates when moistened.

Finally, although screening is a time-consuming commitment to make, the rewards are felt to greatly outweigh the problems. Consistency is urged since intrasite comparisons are difficult to make if different sizes are used.

Faunal Analysis

An adequate faunal analysis depends largely upon an adequate comparative collection. The faunal analysis presented here is, at this stage, a very rudimentary one comprised basically of species identification and enumeration of minimum number of individuals. The identification process, while only the

initial step in a faunal analysis is extremely time consuming.

Minimum number of individuals was computed using the most frequently excavated element for a praticular species. These counts, it must be stressed, represent very conservative estimates. The element upon which the estimate is based is indicated for relevant species (any species having more than one individual) in Appendix 5.

Even with a good comparative collection, problems in identification arise. This was especially true in the identification of avian fauna. The family Rallidae includes rails and gallinules. Based on habits and distribution, at least four different species were possible. To complicate matters even further, dimorphism is present in all species. Using the extensive collections of Dr. Pierce Brodkorb of the University of Florida, Department of Zoology, measurements of the males and females of each species were made. Unfortunately, all archaeologically recovered specimens fell within the range of variation for these species. For this reason, all recovered elements are identified as Rallidae.

Column Sampling

Quantification of constituents of shell sites is a very real need. Efforts of this magnitude of identification were initiated years ago for California sites (Treganza and Cook 1948). Presently, this type of detailed information is not available for southeastern sites. A more precise understanding of the contributions of vertebrate and invertebrate fauna to the subsistence base may be gained from this type of sampling and analysis. Similarly, estimates of energy flow can be calculated when information on caloric intake, number and size of faunal individuals contributing to diet, contribution of floral constituents, and comparative contributions of molluscan species is available.

The basic problem with column sampling is the time required to process samples. Analysis of a single sample should be conceptualized in terms of days and not hours. It is anticipated that total processing of the Cannon's Point material will require years of analysis time.

CHAPTER 5

THE LATE ARCHAIC OCCUPATION ON CANNON'S POINT

Prehistoric Environment

Floral and faunal analysis of excavated materials from Cannon's Point indicates that the Late Archaic environment and the present environment are similar in many ways. Relative location of the salt marshes and sea level heights are two probable differences. Excavations indicate that the area in the immediate vicinity of the marsh ring supported a forest cover (cedar and hardwoods) during the occupation period. Encroachment of the marsh in this area occurred after 820-835 BC.

Prehistoric sea level values have not been an area of agreement among geologists. Controversy has persisted concerning the heights of Holocene sea levels, particularly the period of interest to prehistorians (10,000 BP to the present). Some have contended that sea level has been stable for the past 6,000 years, others that levels have fluctuated, and still others that sea levels have been rising. Lately, scholars seem to be agreed that a rise in sea level has occurred during this time period (Shepard 1964; Emery and Edwards 1966). The current controversy focuses on the rate of rise, a geographically variable factor (Redfield 1967). Brooks (n.d.:2), investigating Florida marine terraces, suggests that 4-5,000 years ago sea levels were approximately 10 feet below the present level.

St. Simon's Island and other nearby barrier islands are composed of Late Pleistocene and Holocene (Recent) geological deposits. The Pleistocene deposits on St. Simon's is known as the Silver Bluff Terrace. According to Hoyt et al. (1964) this terrace was created by the formation of a lagoon-estuary system when sea level was 2-4.5 feet above the present level. Age of the Silver Bluff Terrace is estimated as early as 37,000 years before the present (Hoyt and Hails 1974). Hoyt (1968) suggests that sea level fell to almost 100 meters below the present level approximately 18-20,000 years ago. At that time, the Georgia coast extended much farther east than its present location. After 18-20,000 years ago, sea level began to rise. The rate of rise in the Georgia coastal area is not clear.

The marsh ring is located on the Pleistocene deposits of St. Simon's Island, apparently resting on a relict dune ridge. Submidden soil was reached at 2.30 meters below datum (value for the bottom of Feature #26 which rested on submidden soil) in a north excavation unit (0l8N,0E). The marsh floor on the north side is presently 2.61 meters below datum (stake 4lN,12E); on the south side at 2.49 meters below datum (stake 6S,0E). The instability of the substrate in the marsh encountered in excavations on the east side of the Marsh Ring suggests that encroachment of this area is more recent. Elevation of this area is 2.45 meters below datum. It is felt that when accumulation began, the ring was located in a forested area having a slightly higher elevation than the surrounding environment and overlooking the marsh.

Techno-Environmental Adaptation

Human groups potentially face an infinite number of ways in which to adapt to and exploit their environment. That the variety of choices is not reflected by an unlimited array of unique cultures has at various times been considered by scholars under the guise of "psychic unity", environmental determinism, or limited possibilities. Since Steward's (1938) pioneering studies of the adaptation of Shoshoni hunting and gathering groups to their environment, archaeological anthropology has evolved use of an ecological focus in studies of human prehistory. This perspective has made extensive use of analogy with living or recently extant groups. In situations of archaeological cultures, the question is posed as to the validity of the application of this type of information to human groups having lived so far in the past that there is no surviving oral tradition.

Freeman (1968:267) feels that the use of analogy prevents development of theoretical frameworks oriented toward understanding the sociocultural significance of archaeological inventories based directly on comparison of those inventories. He also stresses that use of models based on parallels with modern groups precludes discovery of parameters of sociocultural structure unique to the prehistoric time period.

I believe that this is a valid contention. That no data base for archaeological cultures of this geographic distribution and time period exists has been sufficiently lamented previously. There is now a body of information from one locale which may be closely examined and compared to what information does exist. This study then intends no ethnographic analogy, simply development of as comprehensive a model as possible for the data generated from the Cannon's Point area.

Initially the "tangibles" - those artifacts which comprise the "cultural inventory" - should be considered. As previously noted, the inventory of extant cultural items is not highly developed (by comparison with other areas) nor plentiful. Use of local raw materials, particularly bone and shell is a common practice. It is possible that a division between articles for utilitarian use and decorative or personal use may be indicated by the rather sophisticated decoration of some bone pins and fragments. This feature is not known to have been valued any more highly than a plain specimen. There is some indication of function among bone artifacts. Some objects appear to be awls and may have been used for perforation or separation. It should be noted that the highly esteemed (by archaeologists) bone pins may simply be lengthy awls. Both awls and pins may be fids for coiled basketry.

Several bone and antler objects called "points" may have functioned in fish procurement as points in leisters or spears. While the presence of the bow and arrow is not supported, bone or antler points could have served to tip arrows. Lithic artifacts, specifically the single recovered projectile point are bulky for bow hunting by contemporary standards. Consequently, the presence of the atlatl is inferred. This may be a justifiable inference but it should be noted that atlatl weights and hooks are not common artifacts in ring site inventories. Presence of large mammals in the faunal sample is also considered evidence of atlatl use. A self spear is an additional possibility.

Ceramics present a special group of problems: early dates, questions of independent invention and diffusion, use, origins. Basically, the problem boils down to the question: What is a group of

mollusc collectors and fishing people doing with ceramic containers before anyone else has them? The idea that this trait must connote settled life poses problems for considering that such a development is not unlikely given need, time, raw materials, creative minds and a receptive audience. It should be mentioned that ceramics do not appear in a rudimentary form in this collection suggesting that the occupants, wherever they originated, possessed the skill prior to their residence in the Cannon's Point locale.

Use of ceramics has been documented in archaeological sites in primarily a storage or mixing vessel role. If Western concepts of diseased or spoiled foods are put aside, many sorts of foods may have been stored in them. Stoltman (1972:44) suggests live storage of molluscs. Nuts, acorns, and seeds are obvious storage considerations. Some processing may have been accomplished in ceramic vessels (e.g. extraction of nut oils).

The tasks accomplished using shell tools are unknown. Functions suggested range from pounding to smoothing, digging to cutting. Some may have been hafted, others simply hand held. A shell bead is the single item confidently considered a decorative or personal object in the Cannon's Point collections.

Again, the role of plant resources in the cultural inventory is probably considerable. Evidence of some sorts of use is occasionally indicated by impressions observed in wet clay. As noted above, this sort of evidence is lacking. In this case, however, some indication of netting is suggested. On the basis of the faunal sample, specimens of the Family Clupeidae are observed to be consistently small and could

have been taken by gill nets. Other explanations for their presence in the sample are use of fish poisons or creek impoundment.

The need for transportation of gathered resources (particularly molluscs) in the habitation locale suggests another use of plant materials. While the weight of some gathered materials (e.g. seeds, berries) would not present too great a burden, some transportable lightweight vessel is indicated for moving heavier foodstuffs. Since ceramic containers are already in evidence, an initial consideration of their contribution to this need is pertinent. Reconstructed ceramic fragments do not indicate large vessels. Judging from the weight of many of the sherds recovered, a whole vessel would increase the weight being transported significantly. A ceramic vessel is a relatively fragile object representing much time and energy in manufacture. This investment would suggest that tasks offering high risk of breakage would not be chosen for these receptacles. In light of these observations, use of basketry is probable. In the Cannon's Point area, several plants capable of contributing to the manufacture of baskets are available (yucca, palmetto, spartina).

Because most of the bivalves (specifically oysters) do not show extensive battering, it is felt that the molluscs were gathered singy or in clumps. Clams evidence alteration suggestive of battering and prying. The significant number of clams exhibiting no alteration implies removal by heating. Clams also loosen when left out of water for a time.

The "intangibles" are more difficult to explore. A consideration of social organization might seem a futile exercise but there are a few

tentative clues: ring construction and treatment of the dead. Regardless of the "obvious waste of energy" involved, ring accumulations of shell are preferred as the way midden material should be piled. There are over 30 ring sites - hardly a happenstance situation. Whether people lived on them, in them, or around them, a circular accumulation of shell refuse in the habitation area was required. In at least two instances (Cannon's Point and Hilton Head) two rings were being accumulated simultaneously. The attention to symmetry and the recognition of a collective desire for this sort of edifice is as real as any Midwestern earthen effigy mound or British long barrow.

Treatment of the dead by aboriginal cultures is of great consequence to archaeologists and all manner of inference regarding status, role, wealth, disease, age, sex, and so forth are made. Skeletal material from Cannon's Point is admittedly not well represented; nor is human skeletal material from any other ring site. In several instances, human material was recovered in a condition suggesting possible post mortem consumption (Moore 1897; Waring 1968). While the material from Cannon's Point does not support or refute these observations, the condition of human skeletal material is one of the occurrence of individual elements in the midden, not articulated burials.

In the lower levels of the marsh ring, the shell midden has a yellowed hue and was looser than in successive levels. In the profiles, whole oysters were in the majority in this level. While discoloration from continually moist environmental conditions was offered as an explanation, this condition was noted in all excavationunits opened in the marsh ring. It was in this yellowed shell that the human cranium and

pelvis were recovered. Adjacent to the pelvis was a large amount of cancellous bone which probably represented the sacrum and vertebral column (one lumbar vertebra was reconstructed from the material). These finds were approximately three meters diagonally separate. The question of the possibility that the original ring configuration was laid out using shell material borrowed from a midden area having previous burials was raised at this time. Because both the cranium and the pelvis are aged at the approximate age of 20-30 years and apparently come from a male, this question may be negatively answered. Nevertheless, human material seems to have received no special treatment.

Seasonality and Sedentism

Answers to the question of seasonality are presently incomplete but some observations may be offered. Floral analysis suggests that a late summer and fall occupation occurred (Small 1933). However, when considering the evidence for human use of the recovered material there are a few problems. Hickory is plentifully recovered, particularly beneath the midden. The area chosen for excavation could conceivably been placed in the vicinity of a prehistoric hickory tree. Some discoloration in the submidden soil suggested rather large roots. Admittedly, hickory does occur in the midden but it is never as heavy nor as concentrated at that of the submidden area. On the basis of the areas tested, a strong case for the use of hickory cannot be supported.

The floral species most suggestive of human utilization is hackberry. While hackberry remains are prevalent throughout the midden, frequency increases in features that were probably associated with food

preparation (e.g. Feature #19-21, #20). Oak and other floral species are not present in high enough frequencies to indicate use. Most of the oak remains are acorn halves and it would seem that the nut would be the desired portion. No amount of acorn hull debris was recovered. Potentially, this would be less well preserved than hickory. If heavy use occurred, one would anticipate considerable specimen recovery.

The faunal sample is even less helpful. One fragment of a migratory water bird does not equal a fall-winter occupation. This could represent a gathered object rather than a food item. One deer cranium with mature, unshed antlers intact was recovered. This finding normally indicates a late summer and early fall condition (Golley 1962:203). The status of fishes is a bit more complicated. To determine the times of peak availability as well as duration of availability, contemporary records and information from commercial fisheries are frequently used. This is another type of analogy, suggesting that conditions of availability or distribution of fishes have not changed through time. This assumption is not valid, but one can use the information to suggest distributional occurrence.

During the excavation, a 5 cm arbitrary level thickness was selected for the purposes of effecting a tightly controlled faunal sample. It was hoped that differential availability could be observed and compared to distributional information resulting in seasonal identification. In general, no such archaeological occurrences were noted during excavation of analysis. One family of fishes may be more heavily utilized as exemplified by the basal levels of the West Ring. The Atlantic croaker (Micropogon undulatus) and other sciaenids (drum family) increase in frequencies remarkably.

Before a secure feeling of having substantially pinpointed an example for seasonal occupation prevades, it should be cautioned that a shell midden is not a static situation. Material may be moved by water, root action, or gravity during the process of accumulation and subsequent to abandonment. During excavation, screening indicated that as much as 20 cm difference could result from simple loosening of shells in the midden. The example cited here is one in which a bone pin fragment was broken during excavation. This example was not an isolated incident.

In the West Ring, species counts for fish MNI (minimum number of individuals) are based primarily on otolith and atlas vertebrae counts. Otoliths are dense osseus objects having distinct configurations allowing interfamilial identification (particularly in the case of the drum family). Each fish has two otoliths (which aid hearing), some have four (two distinct forms are in Stellifer lanceloatus and Bairdiella chrysura). Atlas vertebrae in this sample are very small. Either otoliths or atlases could be easily moved in the midden.

Most of the fishes represented in the sample are available year 'round but are known to occur in larger numbers today in particular months (Dahlberg and Odum 1970: 382-392). Sciaenidae are particularly abundant from April to November, particularly Cynoscion sp., Micropogon undulatus, Sciaenops ocellata, and Stellifer lanceolatus (Dahlberg 1975: 38). Menhaden are considered to be more abundant during the period from May through November, but fisheries experiments report abundant catches in tidal creeks for the months of January and February (Mahood et al. 1974: Table 7). These studies note an increase in tidal creek-located

catches (using trawls) for Micropogon, Stellifer, Cynoscion and Paralichthys during June to September (Mahood et al. 1974:64-71). Catches by gill netting were high for sciaenids during March and May, Mugil in September, and menhaden in April (Mahood et al. 1974:81-83). Young fish were taken by Georgia Game and Fish Division researchers in the estuary by seining: Mugil (27-49 mm) were present in high frequencies in the period from January to May, Micropogon (28 mm) in December, Leiostomus (21-31 mm) February through April (Mahood et al. 1974:86-88). Most of the fish remains recovered in the West Ring were small individuals when compared to skeletal collections at the Florida State Museum indicating that a large percentage of the collection is young fish.

Putting analogues in their proper perspective, there is a possibility of a spring-to-fall occupation based on representative fishes and size of individuals. However, a winter occupation is tenuous, at best.

Sedentism is a more difficult topic to approach. There is no developed measure of sedentism at present. Mention of "increased sedentism" is made, particularly when horticulture is being discussed. Unfortunately any time an extensive heap of midden is observed, statements about sedentism are elicited. It is critical to consider whether the observed attributes of the site as a whole or the reconstructable quality of life of the inhabitants is being discussed. One can have a base camp situation which archaeologically demonstrates or suggests long residence but having a highly mobile daily hunting and gathering round. The overall appearance would be "sedentary" or one of "increased sedentism" but the lifestyle is far from sedentary. One must specify

whether it is the site or the people one is considering. In this case, it is the lifestyle of the inhabitants.

Time is a factor in midden accumulation that is presently more controllable than in the past. Radiocarbon dating does offer a framework within which to work. The critical unknown is the rate of deposition, a question which really asks how much food eaten by how many people? And this question brings the discussion to the limits of information at this time.

Concepts of aboriginal nutritional requirements are based upon standards computed for Western European-derived peoples. These may be grossly inaccurate when applied to the prehistoric populations. The lifestyles are too disparate for application of contemporary standards. Information on dietary deficiencies which might be observed skeletally are lacking because the inventory of human skeletal material from this time period is so scanty. At the present time, there exists no other alternative to protein and calorie computations applied to subsistence remains attempting to work back to rate of deposition. Spatial analysis is useless since the manner in which the land was used for habitation is not known. The question is stuck at the level of, how many Indians are required to eat a site full of oysters? An additional complication to this problem is the possibility of secondary deposition.

If the site represents sedentary occupation, that is, if the length of occupation is in terms of months or years, the theoretical problems of hunting and gathering peoples living in a settled situation arises. Can the lifestyle of coastal inhabitants using the resource assemblage outlined be truly sedentary? While mollusc-producing areas were apparently

quite abundant for a long period of time, the critical resource was fish. Again, in terms of current standards of nutrition, the contribution of fish complements the nutritional value of molluscs. The question of the ability of the lifestyle to be sedentary must be addressed to the resources required to supplement molluscs.

The salt marshes of the world are the most productive ecological system known to man. At every trophic level, production is considerable (Gosselink, Odum, and Pope 1973). The fisheries of the world depend on marsh-estuary systems as the breeding and nursery grounds for species of commercial value. In the Georgia coastal area, this productivity is not a new feature but rather one of many thousands of years of development and modification. It is by no means a stable system since human pollution can rapidly produce change or destruction. But it is productive, and in the absence of drastic geological or human intervention, continues to support an incredible variety of life forms.

Extensive salt marshes were available to the aboriginal inhabitants of the area and made their residence possible. Based on floral and faunal resources, it is possible to live in the Cannon's Point area year 'round. Climatic factors may discourage such occupation since the area is subject to severe northeasterly storms with associated prolonged high tides or flooding. Because there is no indication of the type of structure built by human groups in this area, it is difficult to determine if substantial housing existed or if more sheltered locales must be sought. Perhaps the ring structures afforded some sort of protection.

While the resources are numerous and varied, a large number of occupants residing continually in the area could conceivably deplete

supplies. Seasonal residence would allow floral and molluscan regrowth. The problem thwarting any coherent statement of man-land relationships is that posed by the present inability to relate numbers of occupants to available resources.

Extra-Areal Relationships

Solid evidence for contacts with non-coastal areas exists in the form of lithic artifacts. Such material does not naturally occur in the Georgia coastal strand. Consequently, noting the scarcity of such material, either contacts with people (or groups) possessing lithic artifacts were rare or the uses for which lithic artifacts were really required were few. The scarcity of material does not seem to indicate a sampling bias since such findings are also reported at Sapelo, Hilton Head, and Fig Island. While freshwater fauna recovered in the sample suggests a riverine or lake environment, this material is felt to be a reflection of change in local conditions and not evidence of mainland or riverine contacts.

The impression may have been given and maintained that fiber-tempering of ceramics is only found on the coast of Georgia. Stallings Island and Rabbit Mount are two very important riverine sites. Crusoe (personal communication; n.d.) has located two sites having fiber-tempered ceramics in riverine contexts. The Sansavilla and Popwell's Landing sites are located on bluffs overlooking the Altamaha River. Tests at the Sansavilla site recovered plain fiber-tempered ceramics. In the course of excavation, a large vessel was recovered almost in its entirety. The weight and size of this specimen suggest that its functions did not include movement.

Mention should be made of contacts with Florida since these apparently occurred during the occupation of Cannon's Point and suggest rather significant relationships with contemporary Florida groups. The earliest dates for fiber-tempered Orange ceramics do not precede 2,000 BC. In fact, the oldest dates are 1600-1700 BC (Bullen 1972:10-17). The only evidence from Cannon's Point of Florida contacts is ceramic (the projectile point is considered too tenuous). The nature of the contact between these two areas can only be suggested.

Most fiber-tempered sherds from Georgia and Florida are indistinguishable unless they are made from the chalkier wares of the St. John's River area (noted in the Florida State Museum Tick Island Collections). Typologically, Orange Punctated is very similar to Georgia coastal punctation. Some incised Georgia styles are almost identical to incised motifs on Orange ceramics from Florida sites. While some diagonal and chevron incising is evidenced by ceramic samples from the Georgia coast. the development of the motif does not seem to become as stylistically important as in Orange sites.

It is suggested here that influences from the South Carolina - Georgia area will ultimately be shown responsible for ceramic developments in Florida. These skills were spread coast-wise continuing along the Florida coast and up the St. John's River drainage. Tick Island style motifs present an interesting distribution. Not many ceramic fragments are in existence. Goggin lists seven examples from a cluster of St. John's River sites (1952:43). The exact same few sherds consistently appear in published illustrations (cf. Griffin, JB 1945:221; Griffin, JW: 1952:324; Sears and Griffin 1950:8-3; Bullen 1972:28). The Cannon's Point

collections have Tick Island ceramics but only from the basal levels of the West Ring. Examination of this problem requires more research in the intervening area, more confident dates on fiber-tempered associations from Florida and Georgia, and more systematic considerations of cultural development.

CHAPTER 6

POST-EXCAVATION ASSESSMENTS OF THE LATE ARCHAIC

The Cultural Remains

In Chapter 1, four statements were introduced regarding the cultural phenomena associated with Late Archaic coastal sites. It is possible to re-examine these statements and offer interpretive assessments.

Reliance on Molluscs

In any environment having human inhabitants, some resource is abundant and available. In the Cannon's Point area, that resource was molluscan fauna. Using even a very limited technology, subsistence based on mollusc gathering was possible. However, it is almost a certainty that nutritional requirements could not have been met by such a singular specialization. Analysis of the faunal collection has amply indicated efforts to secure crustaceans and fishes. Additionally, some use of floral resources has been documented.

Subsistence strategy determines to some extent the location of human occupational sites in the environment. Site choice rests on a variety of factors: resource availability, fresh water, shelter, defensive protection, etc. When the requirements for a satisfactory living situation (as perceived by any group) are fulfilled, settlement occurs. That a pattern of settlement utilizing available salt marsh and tidal creek resources resulted during this time period is not unlikely given the ability of groups to be self-sustaining on available resources.

Lengthy settlement cannot adequately be supported by depth and extent of midden accumulation. Radiocarbon dating provides the only means presently available for such estimations. The unknown factors obtaining in this situation are the number of people responsible for the accumulation and the manner in which the accumulation occurs (i.e. intentional or incidental). To be accurate, radiocarbon dating of several locations within a ring site should be undertaken but this represents a substantial capital outlay.

Ceramics

Radiocarbon dates indicate an early ceramic horizon in the Savannah River drainage and along the coasts of South Carolina and Georgia. Fiber-tempered ceramics are dated earlier and probably provided stimulus for the development of sand-tempered forms. One can see Thoms Creek, Horse Island, and Awendaw types as the result of the application of an idea manifested by different techniques of manufacture, especially temper and coiling. The layered effect of fiber-tempered ceramics achieved by the inclusion of vegetal fibers suggests an approximation of the function of the coiling technique but leaves no fracture scar. Intermeshing seems to be more complete than that accomplished by paddling out coils.

It has been suggested in this study that Florida Orange ceramics are developed from the Georgia coastal ceramic tradition of fiber-tempering. There is much to support this contention: radiocarbon dates, decorative motifs, and similarities in cultural adaptation to comparable environmental resources. It should be noted that ceramic motifs along the Georgia coast are highly variable. Conversely, Florida Orange ceramics evidence particular stylistic adherence; the same situation is noted for

Stallings Island. One is reminded of the evolutionary tenet regarding generalization giving rise to specialization. A final observation is appropriate here. The presumed developmental sequence of a plain to a decorated horizon is suspect from the Cannon's Point findings. It is hard to conceive of a group of people having ceramics and being that unimaginative for hundreds of years. While such a situation is apparently documented for the Glades area (Florida), reassessment of this concept on the Georgia coast is needed. New tests in old sites might be the most expedient means.

The difficulties of travel with ceramics is consistently offered as an argument for sedentism. Once people have pottery, they settle down; or once they settle down, they get pottery. At least, that seems to be the general opinion. If most of the traveling is accomplished by water transport instead of on foot, such arguments could be invalid. The use of the canoe is not documented for this time period along the Georgia coast but its presence is indicated by the island environments being inhabited.

It is important to remember that in no site excavated to this date are ceramics observed in what could be interpreted as a developmental stage. MacNeish's work in the Tehuacan Valley of Mexico suggests that developmental stages are observable (1974:536). However, the overwhelming abundance of ceramic fragments in collections compared to the number of whole vessels may be a silently eloquent comment on the state of the art.

Sparse Cultural Inventories

Excavations on Cannon's Point support the observation that cultural inventories are indeed sparse. It is suggested that this is a reflection of a highly specialized, highly efficient technological adaptation and that little exists in excess of need. Replacements could be more easily obtained in such an environment compared with some life zones. In keeping with the urging to make comparisons temporally cross-cultural, it should be noted that material culture at this time is not generalized. Cultural inventories are marked by utilitarian objects. Conceptions of technological elaboration are promoted by the reporting of ornamental objects of bone and shell. Only a single item recovered from the Late Archaic sites on Cannon's Point can be assigned with certainty a personal or decorative role.

End to Lifestyle

If the depositional nature of the marsh cultural level were clearer, some comment regarding a terminal date for the manufacture of fiber-tempered ceramics in the Cannon's Point area could be offered here. Fiber-tempered ceramics in this provenience could be the result of a previous occupation (rings) and the grit-tempered types from a second, noncontemporaneous component. The technical attributes of the fiber-tempered ceramics from the marsh provenience suggest change. In the project area, another site having fiber-tempered ceramics was tested (Martinez 1975:63-66). In this instance, the fiber-tempered ceramics were associated with Deptford ceramics and shell midden materials (predominantly turtle and fish).

Fiber-tempered ceramics disappear in this area to be supplanted by Deptford types. Bone pins do not occur in Deptford period middens and Milanich (1971:182) notes that the worked bone industry in Deptford period sites is not well-developed. Whether Deptford represents an *in situ* development on the Georgia coast or is the result of the movement of peoples from other areas is not presently clear. Perhaps the key to understanding the demise of fiber-tempered ceramics and its cultural associations lies in interpreting the origins of Deptford.

Relationships with Other New World Sites

Ultimately one must consider origins. This task is not an easy one since there are two alternatives (at least): indigenous development or diffusion. The problem of investigating indigenous developments is complicated by the fact that no sites dating between 4,000 and 2,000 BC, and meeting the requirements of originating cultural elements, are extant. There are two directions in which to look: behind the coast (inland) or off the coast.

One inland look is Groton Plantation which contributes the oldest dates associated with fiber-tempered ceramics in the Southeastern United States. The results at Groton Plantation suggest that searching should be extended in this area. Looking off the coast is the second directional choice. It is interesting that Crusoe and DePratter (n.d.) dismiss this area from serious consideration because they feel that conditions were not available for support of mollusc growth and thereby human groups. There seems to be a few things wrong with this life of thinking.

First, Hoyt (1968:22) indicates that 18,000 years ago sea level was as much as 100 meters lower than present day levels. This fact is very

important since 100 meters vertical drop in the Southeastern coastal plain involves many kilometers of horizontal exposure. It is inconceivable that in the 18,000 years available for sea level to achieve its present height that sea level rise was so rapid that conditions for growth of extensive molluscs beds never occurred. Secondly, even if Crusoe and DePratter are correct and no oyster beds could have been present, is that really such a problem? Other exploitable resources are possible for human consumption (e.g. sea mammals, crustaceans, turtles, fishes, not to mention the land mammals). It is difficult to believe that this area constituted a kind of forbidden zone. It is similarly difficult to accept the precondition that a preceramic occupation must be equated with shell heaps.

The truth of the matter is that we have not really looked. It is almost axiomatic in archaeology that when one sets out to find something there is usually success. MacNeish's quest of early domesticates provides an enlightening comment on this point (MacNeish 1974:207-234). The perseverance of L.S.B. Leakey is a similar lesson. Granted, the Atlantic coastline is a very violent geological environment. But, it is not adequate or acceptable to say that probably all evidence has been destroyed. The conviction is that location of potential sites on the continental shelf will come as no surprise. Emery and Edwards (1966: 733-737) suggest just such a possibility.

The alternative of diffusion is more complex and unfortunately, more sensational. The recent popular preoccupation with extra-terrestrial origins for Old World and New World cultures has blunted the public appetite for simple global theories, however. The questions of origins

of civilization-- once, twice, many times, one continent, both hemispheres-- has been a concern of antiquarians and archaeologists for much of human history. Many theories have been advanced but none have become widely accepted. Many New World archaeologists subscribe to a belief in the separation of the two hemispheres since the Bering Strait migrations populated much of the New World. This allows comparison of the two areas and testing of questions relative to the development of human cultures, variety, and similarity.

With the publication in 1965 of Meggers, Evans, and Estrada's work on the Ecuadorian coast came the formalization of a theory of transoceanic contact. James A. Flord, long interested in such theories presented in 1966 an extension of their ideas relating specifically to the Florida and Georgia area of the Southeastern United States. In this paper, Ford traced the development of the early cultures in this area as direct derivations of Ecuadorian and Colombian formative period sites.

Formative is defined by Ford as a cultural stage marked by people having reached the food-production level (1966: 782). This stage gererally occurs between 3000 BC and AD 1. Ford hypothesized that intentional colonizing ventures were the stimuli for the cultural features noted during this time period in the Southeastern United States (Ford 1966: 781-799). The 1966 paper was a prelude to Ford's posthumously published documentation and expansion of these ideas in 1969.

Formative chronology is seldom applied to the cultural developments in the southeastern United States (the notable exception is Coe 1964). Formative has come to connote events and developments leading to the

cultural complexities of the high civilizations of Middle and South America. Use of domesticated plants is another feature commonly associated with a Formative Stage.

Ford's hypothesis of contacts between South America and Southeastern United States has not received a great deal of professional debate since publication. Ford's untimely death removed the person to whom such argument would be addressed. It is interesting that there is yet no dialogue concerning his hypotheses. One can understand the respect with which Ford's contributions are held but it seems likely that Ford would have been far more approachable in defending his diffusionist views than others have been. Is there no argument because archaeologists secretly feel that whether or not they can accept Ford's data and explanations, some day someone will pin it all down even tighter than Ford? Or does it simply not make much difference?

Ford's chief defender (to the knowledge of the author) in the Southeast is Donald Crusoe. Crusoe's doctoral dissertation compared ceramic attributes from South American and Southeastern sites plus available data from site reports and concluded that Ford was indeed correct.

> A comparison of site configuration, geology, animal remains, and aesthetic attributes of artifacts clearly points to an identical lifestyle for the Colombian and Southeast United States fiber-tempered pottery-making people. (1972: 88)

One of the greatest problems is that research oriented toward a consideration of the indigenous events in South America has taken a back seat to the diffusionist schemes. From 1965 to 1972, Meggers, Evans, and Estrada's theoretical stance dominated concepts of South American development. In 1972, Bischof and Gamboa reported the discovery of a Pre-Valdivia pottery complex. Named San Pedro, this pottery complex

was critically important for a number of reasons. First, the type did not represent an incipient stage of ceramic technology but was observably more primitive than Valdivia. The San Pedro ceramics generally resembled the Canapote ceramics of northern Colombia. Most interestingly though, the excavations where these ceramics were recovered were recovered were conducted as a display of cultural stratigraphy at the by then famous Valdivia site itself. This discovery was a blow to the explanations of South American ceramic technology as Japanese imports allowed a return to the pursuit of developing an understanding of events in South America in terms of South America. Today research is on-going and rumors are heard of more shell rings and more fiber-tempered ceramics in Ecuador this time. One shell ring has been excavated by Porras on an island off the Ecuadorian coast. Efforts to secure a copy of this manuscript have failed.

Puerto Hormiga is another matter. Reichel-Dolmatoff's excavation (1965) clearly documents the presence of a shell ring site in coastal Colombia having fiber-tempered and sand-tempered ceramics. Its inhabitants subsisted on shellfish and vertebrate fauna. This is the only documented example available from Colombia, but other shell rings are rumored to exist. In Colombia, fiber-tempered ceramics are associated with both estuarine molluscs (Puerto Hormiga) and riverine molluscs (Bucarelia site on the Magdalena River) (1971:345). Reichel-Dolmatoff (1972:2) posits construction by the filling in of areas between several small individual middens. Cultural stability characterized by little change in material culture is observed by Reichel-Dolmatoff for this time period.

The question that has always been a problem with Ford's hypothesis is that he never explains what the initial motivating factor for the hypothesized voyages might be. We are led to believe that religious fervor suffices in the Theocratic Formative, but what sets off the Colonial Formative? Moseley, in his recent monograph on the foundations of Andean civilization makes an interesting comment about the nature of the development of civilization.

> Civilization has the potential of arising out of any type of subsistence economy capable of supporting a sedentary and dense population with many people living in daily contact with one another and with a certain amount of time free from food procurement. (1975: 115)

Population pressure arising out of insufficient resources is a possible stimulus for the seeking of other comparably rich environments. If overexploitation of available food could be adequately demonstrated in the Intermediate Area or South America, a stronger, more believable case would be presented. Generally causal factors are multifaceted and single explanations are hardly acceptable.

There has been a tendency to attach great expectations to cultural groups exhibiting early technological developments, particularly ceramics. The failure of these advances to provide stimuli for development of "civilization" presents a difficult explanatory problem. This question is particularly apt for the southeastern coastal area subsequent to the Late Archaic. Considering Moseley's (1975: 115) criteria for the civilizational process, perhaps reasons for the disappearance of the lifestyle associated with early ceramics and ring sites can be sought in the man-land relationships

of the coastal area. If environmental resources could not support a sustained population increase and raw materials requisite for technological improvements for better exploitation of resources were not available in the locale, subsequent development would not be favored. Consequently, populations would remain low and material culture rather meager. After the Late Archaic, the South Carolina and Georgia coast was generally marginal to the areas of notable cultural development.

Caldwell (1958:12) considered a mollusc centered subsistence base to be an Archaic invention leading to a "...greater degree of residential stability." Additionally, Caldwell (1958:15) presented molluscs as an abundant food resource correlated with the innovation of earthenware. Seasonal movement was suggested and the use of major stream valley areas (Caldwell 1958:14). Evaluation of these observations remain a need some seventeen years after their publication.

Excavation of inland, riverine sites and comparisons with coastal sites are required at this point to evaluate the contributions of subsistence base, affiliations of cultural inventories, and occupational period represented. During the Late Archaic, riverine and coastal areas may have been occupied by groups of people utilizing the resources of a locale without need for seasonal movement. Conversely, inland sites may be the seasonal residences of groups responsible for shell ring and midden sites on the coast. Direction of inquiry toward these questions is a very critical need for expanding perceptions of cultural developments in the Southeastern United States. Understanding the role of shell ring and midden sites is incomplete without such investigation.

Research on Cannon's Point has shown that there are many questions remaining which can be archaeologically investigated and much to learn of cultural developments in the coastal environment during this time period. Perceptions of human groups in terms of their cultural inventories or attributes of cultural artifacts is considered a very narrow view. Application of systematic and innovative methodologies and techniques to the problems of cultural development during the Late Archaic is urged. Such research is requisite to any evaluation of the origins of cultural traits in the southeast as being either indigenous or diffused.

Summary and Conclusions

In conclusion, a reiteration of the salient points under consideration in this study is presented.

1. The earliest aboriginal earthenware in the Southeastern United States is the fiber-tempered type. Radiocarbon dating indicates a 2500-1000 BC time range for these ceramics in this area. The ultimate derivation of fiber-tempered ceramics from some other New World area has been explored. Colombia and Ecuador have been suggested on the basis of early radiocarbon dates (3000 BC) and early ceramic types (San Pedro and Valdivia) respectively.

2. Georgia and South Carolina fiber-tempered ceramics are temporally earlier than South Carolina sand-tempered types. Fiber-tempered ceramics and sand-tempered types are subsequently contemporaneous and overlap in geographic distribution. A causal relationship may be indicated between fiber-tempered ceramics and the development of sand-tempered types.

3. Georgia coastal fiber-tempered ceramics are temporally earlier than Florida Orange varieties. On the basis of motif development and distribution, a causal relationship has been suggested between Georgia and Florida ceramics.

4. Aboriginal subsistence in the Cannon's Point locale and along the coastal strand was primarily based on a gathering and fishing procurement system. The tidal creek biotope was exploited most heavily. Marsh and forest biotopes contributed to the subsistence base but evidence for exploitation of the beach-dune biotope is absent.

5. Molluscs, crustaceans, and fishes were the primary faunal base. Reptiles and mammals were secondary contributors to the aboriginal diet. Floral contribution is assumed but not adequately documented.

6. Seasonality of settlement probably involves at least a Spring to Fall occupation. Winter residence is presently unsupported. No indication of frequency of use of the Cannon's Point locale during this time period is available at present.

7. Presence of ceramics does not equate with a sedentary existence. Determining the degree of sedentism is coupled with the problem of ascertaining seasonal or year 'round residence in the locale. Use relationships with riverine and mainland areas are unclear.

8. Shell ring sites are purposeful accumulations of subsistence and cultural debris consistently located in the barrier islands--lagoons or estuaries of the coastal strand. Use as a fishtrap is discounted but other functional hypotheses cannot presently be dismissed. The process of ring deposition is unclear.

9. At approximately 1000 BC, the lifestyle (as defined by subsistence strategy, site configuration and location, and material culture) ends. While subsequent occupation of the area occurs, the coast is generally marginal to the cultural elaboration of succeeding archaeological periods.

APPENDIX I: SHELL RING SITE SUMMARIES

Sewee Mound

William E. Edwards excavated the Sewee Mound Shell Ring in 1965 using a variety of techniques. Located adjacent to and siding on active salt marsh, this ring is incomplete on its southeast side. Pumps were required to complete excavations in several units. Initially, ¼-inch screen was used, with a change to 1/8-inch prompted by an observable loss of faunal material. Additionally, water-separation was used. Excavation units were 5 ft. X 5 ft. squares using 6 in. arbitrary levels. A total of four units were opened in the ring proper and one in the ring center.

Edwards' report remains in very preliminary form and apparently no further analysis of this material has been done or is planned. Faunal analysis is only vaguely outlined. A summary of the cultural and subsistence remains recovered follows.

Cultural

Ceramics.- Edwards mentions a ceramic sample size of 10,000 sherds. Of this sample, 4/5 are said to lack decoration. All are of the Awendaw Series. Specifically mentioned are seven Awendaw Red Filmed, three Awendaw Dentate Stamped, and two Awendaw incised. Combing, punctation, pinching, and finger grooving are additional methods of decoration. Ten sherd abraders were recovered. Listed are 11 baked clay objects--all appear to have a central hole.

Shell.- Columella sections, "conch" plates, beveled picks or adzes, clam and cockle scrapers, and drilled oysters are listed. A single shell bead was recovered. Edwards identifies its source as clam shell.

Lithics.- Of the 15 lithic fragments that were recovered, four evidenced use. Edwards lists one chert spear point, one smaller broad stemmed projectile point, one spherical bead, and a pale blue-grey flaked fragment.

Bone/Antler.- Five examples of bone pins were recovered. Four of these were engraved. Additionally, two antler projectile points, one antler atlatl hook, a drilled canine, two cylindrical objects, and a beveled bird bone chisel are mentioned.

Fauna.- Vertebrate fauna mentioned includes fish (catfish, drum, and gars), alligator, turtles, deer, dog, opossum, and human remains. Oysters, mussels, marsh snails, razor clams, cockles, Angel wings, and whelks were listed as invertebrate remains along with barnacles, crabs, skates or rays, and possibly lobster.

Flora.- The single example of floral material recovered at the time of the report was hickory nut.

Excavation

Cubic volume excavated 59.7 m^3 (ring midden)

4.65 m^3 (center)

Units: A-1, F-1, E-1, D-1 (ring midden; H-1 (center.

Source

Edwards 1965

Fig Island

E. Thomas Hemmings of the Institute of Archaeology and Anthropology of the University of South Carolina excavated the largest of the Fig Island rings in 1970 (Number 2). Hemmings' excavation strategy followed Waring and Larson's approach. A trench 10 ft. wide was excavated from approximate ring center through the east arc of the ring. Additionally, a trench was excavated through the southern arc. Hemmings used ¼-inch screens for general levels and window screen for features and pits. For arbitrary levels 6-inch screens were used.

Cultural

Ceramics.- 1765 Sand-tempered sherds (70.9% of collection)

904 Sand-tempered Plain (51.2% of sand-tempered sherds)

861 Sand-tempered Decorated (48.8% of sand-tempered sherds)

7 Fiber-tempered sherds (0.2% of collection)

719 Indeterminate sherds (28.9% of collection)

This listing does not include material from features or a single fragment of European feather-edged ware recovered superficially in the south trench. Reported decorations on aboriginal ceramics list punctation as the most common. Use of the marsh periwinkle as a tool for punctating the exterior is frequently mentioned. Both the spire and the wall of the mollusc were used. Cane provided another punctating tool. Drag and jab (linear punctation) motifs are present but were not common. Zoning of motifs seems to be a very common practice.

Bone/Antler.- Numerous bone pin fragments, socketed antler projectile points, and bone awls are listed in Hemmings' Field Specimen Catalog.

A geometrically incised specimen is illustrated in Hemmings' initial report (1970a). Turtle carapace evidences interior scraping.

Lithic.- One bifacially retouched chert fragment is catalogued. Limonite nodules and hematite are also mentioned.

Fauna

A fairly complete faunal list is available for this excavation from the files of the Zooarchaeology Lab, Florida State Museum.

Callinectes sp.
Sphyraena sp.
Mylobatoidea
Acipenser sp.
Lepisosteus sp.
Amia calva
Ictaluridae
  Ictalurus sp.
Ariidae
  Arius felis
  Bagre marinus
Opsanus sp.
Caranx sp.
Cynoscion sp.
Micropogon undulatus
Pogonias cromis
Sciaenops ocellata
Archosargus sp.
Mugil sp.
Paralichthys sp.
Rana sp.
Colubridae
  Coluber constrictor
Drymarchon corais
Agkistrodon sp.
Kinosternon sp.
Terrapene carolina
Malaclemys terrapin
Chrysemys sp.
Gopherus polyphemus
Ibis sp.
Anas sp.
Melleagris galapavo
Rallidae
Didelphis virginiana
Sylvilagus sp.
Sciurus carolinensis
Neotoma floridana
Sigmodon hispidus
Mustela vison
Procyon lotor
Odocoileus virginianus

Flora

Hickory nutshells are the only floral specimens mentioned.

Source

Hemmings 1970a, 1970b; Field Specimen Catalog

Institute of Archaeology and Anthropology: field analysis of ceramics

Chester Field

Warren K. Moorehead and field party sampled sites in the vicinity of Beaufort, South Carolina, in 1933. One of these sites, the Chester Field site, is described as a "... horseshore-shaped mound, the ends of which meet the steep overgrown embankment of Broad River" (Flannery 1943:150). The site is interpreted as a Stallings Island Culture permanent camp or village. There is no suggestion that the site was a ring.

Excavation proceeded by "test holes" and trenches. In the center of the ring, considerable disturbance was revealed. Ceramics, animal bone, and fire pits were encountered. The elevation of the site suggests that little disturbance from marsh or tidal inundation has taken place in the ring center. Ceramic artifacts were analyzed by Griffin.

Cultural

Ceramics.- 28 Stallings Plain
124 Stallings Punctated
6 Miscellaneous (finger pinched, incised)
158 sherds

Bone/Antler.- Four bone pins having decorations were recovered along with a bone scraper and one antler point. An antler prong having an incised line is reported.

Lithic.- The lithic inventory lists only several chipped flints and flakes and one half of a round, pitted stone.

Fauna

Vertebrate fauna mentioned were deer and raccoon. Oysters, clams, and marsh periwinkles are listed as midden constituents. Some concentrations of periwinkles are noted.

Source

Flannery 1943:147-153; Griffin 1943:154-168

Hilton Head Island

Alan Calmes, a member of Edwards' Sewee Ring field crew sampled three ring sites on Hilton Head Island, South Carolina. His remarks are oriented toward ceramic chronology. Consequently, very little else is mentioned. Radiocarbon dates are reported for each of the three sites. One 5 ft. x 5 ft. excavation unit was opened in the midden deposit of each ring and one in each ring center. Arbitrary 6-inch levels were used and screening is not mentioned.

When considering the significance of the radiocarbon dates, caution is urged. Calmes had a situation of two intersecting rings (Large and Small Ford rings), but he did not sample the intersection to determine superposition. There is no date for the basal levels of the Large Ford Ring. The total depth of deposit in the Small Ford Ring is 2 ft. On the basis of a date taken from well above 2 ft. in the Large Ford Ring, Calmes contends that the Small Ford Ring is older. Ceramic differences are also offered. In the Small Ford Ring, Calmes recovered more carefully applied decorative motifs similar to those at the base of the Large Ford Ring. The status of this report is hardly acceptable.

Cultural

Large Ford Ring	Small Ford Ring	Sea Pines Ring
902 total sherds	87 total sherds	127 total sherds
Thoms Creek (majority)	Thoms Creek only	Thoms Creek (majority)

Fiber-tempered (minority)	Punctate comparable to lower levels of Large Ford Ring.	Fiber-tempered (minority)
¼-1/3 of collection was punctated		Drag and jab (51)
Multiple drag and jab increased toward the upper levels.		Fingernail marked

Bone.- One bone pin with an engraved scroll motif is mentioned.

Lithic.- Savannah River Stemmed projectile points are reported.

Shell.- "Conch" shell tools are listed.

Other.- Fired round clay balls having a central hole were recovered.

Area Excavated

Large Ford Ring: 5 cubic meters

Small Ford Ring: 1.4 cubic meters

Sea Pines Ring: 1.4 cubic meters

Source

Calmes 1968

Oemler Marsh Midden--North

This site represents the northernmost Georgia shell ring and is located in the Savannah locale. The site was initially tested by a WPA crew. Waring notes the scarcity of ceramic material. DePratter surface collected this site and recovered sherds of sand-tempered types he believes may be related to South Carolina Awendaw types.

Waring.- From a 10 ft. x 10 ft. test, Waring recovered 12 sherds. No mention is made of their type.

DePratter.- From a surface collection, DePratter recovered 34 sherds 26 Fiber-tempered Plain, 6 sand-tempered Plain, 2 Deptford. Two possible baked clay objects and a bone pin fragment were also recovered.

Source

Waring 1940:182

DePratter n.d.

Creighton Island

Creighton Island is located between Sapelo Island and the mainland. The A. Busch Krick site, excavated by Crusoe and DePratter occupies a part of the southwestern land-marsh margin. Today a horseshoe configuration remains, having a height of 2.1 meters on its northern arc. Elsewhere (east and south), the height is approximately 1.2 meters. Two excavation units were opened by Crusoe and DePratter: one 3 ft. x 15 ft. trench in the north arc; one 6 ft. x 6 ft. test in the east arc. Zonation was observed and a possible hearth. An area of crushed shell which is believed to be a living floor is reported by no postholes were identified.

Cultural

Ceramics.- Upper 6 inches: glass, sand-tempered sherds, and fiber-tempered sherds. Below 6 inches: fiber-tempered sherds.

Lithics.- One crudely shaped flint fragment is the only lithic material reported.

Bone/Antler.- Antler projectile points, and punches and flakers are reported.

Shell.- The only mention of shell usage is of whelks with battered bases.

Area Excavated

4.07 cubic meters (east)

2.74 cubic meters (north)

Source

Crusoe and DePratter n.d.

DePratter n.d.

Sapelo Island

Waring and Larson excavated a 100 ft. long trench from approximate ring center northward to the outer ring edge. Arbitrary levels of six inches were used. Levels (1-17) were not horizontal but followed ring contour. Artifact analysis is based on Unit 4, a 200 ft.^{2} (surface excavation). Material was trowelled; no report of screen use is mentioned.

Cultural

Ceramics.- 1121 St. Simon's Plain
9 St. Simon's Punctated
4 St. Simon's Incised
3 Linear Punctated
4 Lamar Plain
4 Lamar Complicated Stamped
102 Baked Clay Objects
1 Cylindrical Clay Object

Lithics.- 1 bannerstone
1 stone ball
1 flint fragment
1 ferrous sandstone bead

Bone/Antler.- 11 bone pins (plain and engraved)
4 bone awls
1 antler projectile point
8 fragments of worked bone

Shell.- 1 shell bead

Fauna

Crassostrea virginica

Busycon sp.

Meleagris gallapavo

Butorides virescens

Mercenaria sp.
Anadara sp.
Balanus sp.
Callinecthes sp.
Mennippes sp.
Bagre marinus
Pogonias cromis
Pseudemys sp.
Caretta caretta
Sciurus carolinensis
Sylvilagus sp.
Didelphis virginiana
Procyon lotor
Canis familiaris
Tursiops truncatus
Odocoileus virginianus
Homo sapiens

Area Excavated

48.15 cubic meters

Excavation Unit

10 ft. x 20 ft. x 8.5 ft. + 1700 cubic feet

Source

Waring and Larson 1968:263-278

St. Simon's Island

1. Bony Hammock

DePratter excavated a 3 ft. x 6 ft. exploratory trench in this C-shaped midden in 1972. Located on the Oatland Plantation, this site is only 4 km. from the ring sites on Cannon's Point. Bony Hammock was heavily borrowed for tabby manufacture during the plantation period.

Ceramics recovered were essentially plain but those decorated sherds from DePratter's test and others recovered by surface collection strongly suggest affiliation with Florida Orange Period ceramics. Decorative motifs were incised. Baked clay objects were recovered from the lowest level. No bone or lithic material was recovered.

Source

DePratter n.d.

2. The Ring at Cannon's Point (Marsh Ring)

Excavations in this marsh-situated shell ring were initiated in 1973 and ended in 1975. The site is basically a C-shaped deposit being incomplete on the northeastern arc. Interiorly, a shell deposit juts out from the southwest toward the northeast. This projection may represent an earlier configuration that was subsequently widened.

Excavation units were usually 3 m x 3 m in size. The midden deposit averages about 1.3 m in depth. At its deepest, the deposit is approximately 1.8 m. Excavation was conducted inside the ring with no observance of hearths or habitation evidence. Extensive excavations were made outside of the ring revealing a cultural deposit approximately 0.5-1.0 m below the present marsh surface. Fiber-tempered ceramics and grit-tempered ceramics were recovered in association. The deposit was not associated with a shell deposit but a quantity of vertebrate faunal remains was recovered.

Source

Marrinan n.d.: field notes

3. West Ring

Initial testing of this site was made in 1973 and excavations continued in 1974 and 1975. The ring is located in forest with a relatively heavy understory. Depth ranges from 0.45-0.65 m. Using screens two 2 m x 2 m units were opened.

Source

Marrinan n.d.: field notes

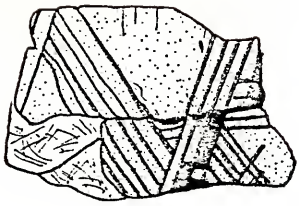
APPENDIX 2

FAUNAL COMPARISON BY SCREEN SIZE, 9GN 76- TEST 1

Screen size	3/4x3/8 inch	1/8 inch
Volume excavated	2.2 m^3	0.4 m^3
Number species identified	15	27
Number individuals identified	19	95
Number fragments identified	60	709
Number fragments recovered	101	2292
Unidentified fragments	41	1583
Fish	17	1486
Amphibian		1
Snake		2
Turtle	4	
Bird	1	17
Mammal	17	39
Miscellaneous		31
Identified species		
Fish	5	15
Turtle	3	2
Mammal	5	7
Crustacea		2
Identified Individuals (MNI)		
Fish	11	82
Turtle	5	2
Mammal	5	7
Crustacea		2

APPENDIX 3

ILLUSTRATIONS: CERAMICS HAVING ORANGE MOTIFS



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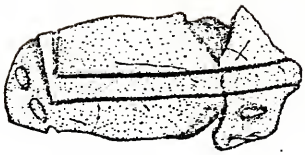

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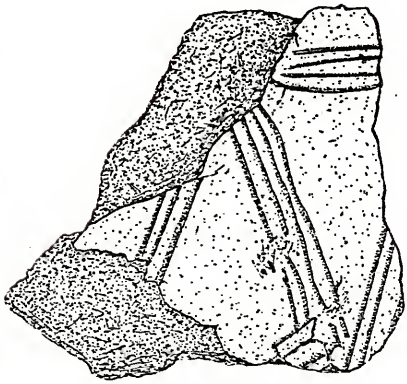
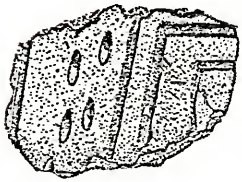


63



9GN76
62

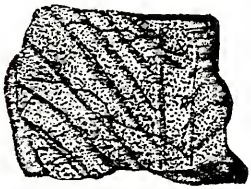


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FIGURE 6. Ceramics having Orange Motifs.

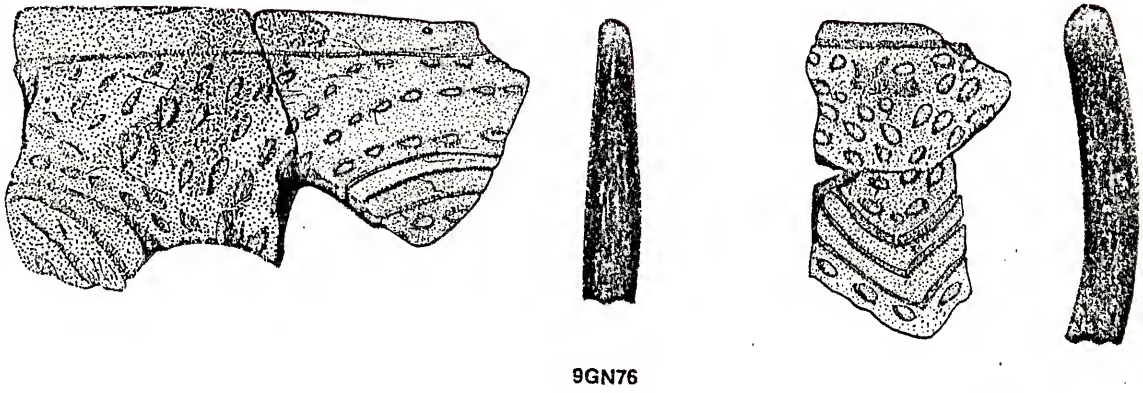


FIGURE 7. Ceramics having Orange Motifs - Tick Island Variant.

APPENDIX 4: FEATURE SUMMARIES

FEATURE #1

Location: □9S, 15E
Description: grey colored area in the southeastern corner of the square. Probably represents the old marsh-ring periphery. Discontinued as a feature.

FEATURE #2

Location: □9S, 15E
Description: chocolate brown clay and cemented oyster shells. This proved to be the ring surface and matrix which had resulted as the effects of tidal innundation in this area of the ring over the years. Discontinued as a feature.

FEATURE #3

Location: □ 6S, 15E
Description: concentration of potsherds located at 1.96 meters below datum (36 cm below the surface). Approximately 0.18 meter in diameter. Quantity of crab and fish observed in the same area. Ceramics recovered had incised chevron motif with zoning; randomly placed punctations within zoned area. Feature opened 7/5/73; closed 7/23/73 at 2.19 meters below datum.

FEATURE #4

Location: □ 6S, 15E
Description: concentration of pottery in association with grey sand and carbon. Approximately 20 cm in diameter, located at 2.18 meters below datum. Opened 7/12/73; closed 7/16/73.

FEATURE #5

Location: □ 6S, 15E
Description: Tagelus concentration observed at 2.10 meters below datum. Numerous broken and whole individuals. Diameter of area 0.52 meter north-south by 0.47 meter east-west. Opened 7/16/73; closed same day.

FEATURE #6

Location: □ 6S, 15E
Description: carbon concentration in association with oysters, Atlantic ribbed mussels, tagelus, and a small amount of grey sand. Tagelus and mussels are crushed. Matrix is chocolate clay. Elevation: 2.21 meters below datum (top); 2.27 meters below datum closing. Opened 7/19/73; closed same day.

APPENDIX 4 (Continued)

FEATURE #7

Location: □ 6S, 15E
Description: concentration of dark grey sand and carbon surrounded by scattered carbon and sand. Matrix continued to be chocolate clay, relatively free of faunal material. Very tiny, red powdery clay fragments interspersed throughout. Datum elevation: top at 2.19 meters; bottom at 2.26 meters. Opened 7/19/73; closed same day.

FEATURE #8

Location: □ 6S, 15E
Description: large carbon concentration in chocolate clay. Top datum elevation: 2.28 meters below datum; bottom at 2.29 meters below datum. Opened 7/26/73; closed same day.

FEATURE #9

Location: □ 6S, 15E
Description: clam shell deposit underlain by crushed mussel. Shells have a reddish-black appearance. Some shells are flat while others are on edge in the matrix. Approximately 18 whole individuals represented. Opening datum at 2.29 meters; closing at 2.39 meters below datum. Opened 7/25/73; closed same day.

FEATURE #10

Location: □ 6S, 15E
Description: pottery concentration in the northwest corner of the square. Opening datum elevation at 2.33 meters below datum. Two large ceramic fragments recovered with some faunal material. Closing datum elevation: 2.375 meters below datum. Opened 7/31/73; closed same day.

FEATURE #11

Location: □ 6S, 15E
Description: carbon concentration in northeast quarter of the square appearing to continue into north baulk. Rectangular in shape. Located at 2.36 meters below datum top elevation; closed at 2.39 meters below datum. Association of sherds and fauna observed. Opened and closed 8/1/73.

FEATURE #12

Location: □ 6S, 15E
Description: grey sand in southeastern corner of the square. Top datum elevation at 2.56 meters below datum. Extends into east and south baulk. Flotation sample from this area yielded quartz pebbles. Probing this area revealed that the deposit was sterile of shell material. Continuance of excavation of this feature during the Winter 1975 revealed that the deposit of shell barren soil apparently constitutes the back dirt from a pit. The adjacent pit yielded one worked lithic specimen.

APPENDIX 4 (Continued)

Sides of the deposit of sand slanted outwardly. Opened 8/7/73; closed 3/18/75.

FEATURE #13

Location: □ 6S, 15E
Description: area of crushed mussel shell in grey-tan sand. Subsequent to observing this area, the crushed mussel was observed throughout the floor of the excavation unit. It was possible that walking in the square caused this feature. No remarkable associations were observed. Opened 8/12/73; closed same day.

FEATURE #14

Location: □ 9S, 15E
Description: concentration of grey-black sand, carbon, clay, sherds, and faunal remains. Feature material continues into the east baulk. Opened at 2.26 meters below datum; closed at 2.38 meters below datum. Opened 8/13/73; closed 8/16/73.

FEATURE #15

Location: □ 18N, 3E
Description: area of compacted shells with fauna and ceramics. A kidney-shaped area within a matrix of humus, dark brown soil, and roots. Top datum elevation at 0.95 meters below datum (14 cm below the surface). It was felt that the feature area represented the old ring surface below a more recent humic deposit. Opened 4/8/74; closed 4/22/74.

FEATURE #16

Location: □33S, 15E
Description: concentration of potsherds and floral material. Top datum at 3.33 meters below datum (approximately 73 cm below surface). Feature bottomed out at 3.39 meters below datum. Matrix grey to white mottled sand with Spartina roots. Opened 4/17/74; closed same day.

FEATURE #17

Location: □33S, 15E
Description: concentration of faunal material, potsherds, and sandstone in association with a root system. Datum elevation 3.33 meters below datum top; closed at 3.38 meters below datum. Opened 4/19/75; closed same day.

FEATURE #18

Location: □ 18N, 3E
Description: increased incidence of clams, garbage snails, and faunal bone with scattered carbon. Top elevation at 1.13 meters below

APPENDIX 4 (Continued)

datum (22 cm). Clams mapped and umbos saved for count. Nutshells frequently observed as well as seeds (notably hackberry). Feature area redefined on several occasions. At one point, a concentration of crabs was encountered (99 individuals). The faunal analysis from this feature is noteworthy (Appendix 5). Opened 4/24/74; closed 2/27/75. Closing datum elevation at 1.83 meters below datum.

FEATURE #19

Location: □18N, 3E

Description: area of loose shell and higher amounts of soil. General soil condition was ashy. Potsherds found in upper levels. Datum elevation for top at 1.09 meters below datum (average). Feature observable in the west baulk as excavation progressed. Atlantic ribbed mussel and Tagelus in higher frequencies; terrestrial snails not very common. One fragment of lithic material recovered (granitic hone). Several examples of worked bone recovered, notably a raccoon (Procyon lotor) fibula awl. dence for consumption of dog from this feature. Feature apparently represents a pit filled with ashy shell and a few items of cultural material. Probably extends into Feature #21 in the adjacent square (18N, 0E). Closing datum elevation 1.62 meters below datum. Opened 5/6/74; closed 8/21/74.

FEATURE #20

Location: □ 18N, 0E

Description: initially noted as an area in the center of the square composed of broken and fragmented burned shells; sample taken for flotation. Subsequently, a sizeable potsherd recovered adjacent to the designated flotation area. Feature designation included old flotation area. Top elevation: 1.09 meters below datum. Opened 5/8/74; closed 1/14/75 at 1.81 meters below datum.

FEATURE #21

Location: □ 18N, 0E

Description: area of darker soil noted initially with fragmented shell and roots. Some bone and clam shells were observed. As excavation progressed, area of tightly cemented ashy shells was reached. High incidence of hackberry seeds and fauna observed at this level. Feature extended into the baulk (east) and joins with Feature #19. The feature apparently represented a hearth. Opened 5/9/74; closed 1/15/75 at 1.50 meters below datum (opened at 1.165 meters below datum).

FEATURE #22

Location: □33S, 12E

Description: pottery concentration with associated quantities of carbon; faunal material also present. Top elevation: 3.255-3.35 meters below datum. Bottom at 3.47 meters below datum. Large quantity of

APPENDIX 4 (Continued)

fiber-tempered sherds recovered from this feature. Most may belong to one pot that was broken in place, but the surfaces were too eroded for reconstruction. A quantity of grit inclusions noted in the paste. Opened 5/13/74; closed same day.

FEATURE #23

Location: □ 6S, 15E

Description: area of blue grey sand mottled with carbon. Contained some shell and faunal material. Clay and shells surrounded the feature area. At this level, shells--particularly oysters and whelks--show extensive signs of weathering (very soft and appear deteriorated). Top elevation at 2.69 meters below datum. As excavation progressed, it became obvious that the feature represented the basal midden with shell-sand admixture. Discontinued as a feature. Opened 8/9/74; closed Winter 1975.

FEATURE #24

Location: □ 18N, 0E

Description: initially designated a flotation area because of high incidence of faunal material observed. Higher frequency of loose sandy soil in the feature area than the remaining midden floor. Faunal concentration composed of fishes, crabs, and turtle primarily. Appears to continue into the baulk on the east side. Continued into the flotation column sampling area against the south baulk. The deposit of faunal material was very thin actually. This feature was reminiscent of a spilled or dumped vessel of soup or stew. Datum elevation at 1.96 top center. Closing datum elevation: 2.19 meters below datum. Opened 1/19/75; closed 1/27/75.

FEATURE #25

Location: □ 18N, 0E

Description: initially noted as an area of dark brown humic material appearing in the west and south profiles. Top datum elevation at 1.96 meters below datum; closed at 2.26 meters below datum. Opened 1/23/75; closed 1/30/75.

FEATURE #26

Location: □ 18N, 0E

Description: concentration of potsherds and Busycons in what was apparently a hearth. Datum elevation: top at 2.30 meters below datum. Sherd KK was curvilinear punctated incised. These sherds and Busycons rested on submidden soil. Closing datum elevation at 2.32 meters below datum. Opened 1/31/75; closed 2/7/75.

APPENDIX 4 (Continued)

FEATURE #27

Location: □18N, 0E

Description: concentration of sherds, clams, and carbon. Datum elevation at top was 2.295; bottom at 2.30 meters below datum. Located atop submidden soil. Opened 2/2/75; closed 2/7/75.

APPENDIX 5: ¤6S,15E-FAUNAL LIST

Species	Minimum Number of Individuals	Number of Fragments
Callinectes sp.	18	301
Carcharhinus sp.	1	1
Rajiformes	1	75
Dasyatis sp.	1	4
Lepisosteus sp.	1	300
Amia calva	1	162
Elops saurus	1	22
Clupeidae	3	92
Ariidae	29	721
Arius felis	7	17
Bagre marinus	17	402
Micropterus sp.	1	1
Sciaenidae	9	91
Bairdiella chrysura	12	21
Cynoscion sp.	9	12
Leiostomus xanthurus	9	9
Micropogon undulatus	7	16
Pogonias cromis	2	9
Sciaenops ocellata	11	70
Stellifer lanceolatus	2	5
Mugil sp.	31	455
Paralichthys sp.	4	88
Siren sp.	1	1

APPENDIX 5 (Continued□6S,15E

Species	Minimum Number of Individuals	Number of Fragments
Kinosternon sp.	1	6
Malaclemys terrapin	1	23
Chrysemys sp.	1	7
Deirochelys reticularia	1	9
Rallidae	2	6
Didelphis virginiana	2	32
Sylvilagus sp.	1	4
Rodentia	1	3
Oryzomys sp.	1	1
Mustela vison	1	1
Canis familiaris	1	1
Procyon lotor	2	19
Odocoileus virginianus	2	97
Homo sapiens	1	2

APPENDIX 5: □6S,15E-FAUNAL LIST BY LEVEL

(1 level=15 cm)

	1	2	3	4	5	6	7	8	9	MNI
Callinectes sp.	2/13	4/29	5/87	0.18	1/9	5	19	1		5/171
Carharhinus sp.						1				1/1
Rajiformes					7	4	46	16	2	1/75
Dasyatis sp.				1		1	1			1/3
Lepisosteus sp.		5	5		1		32	126	127	1/296
Amia calva							34	90	38	1/162
Elops saurus							10	4	8	1/22
Clupeidae					6	1	1/59	16	4	1/86
Ariidae	3	24	80	34	28	16	168	139	79	17/571
Arius felis		3	4		2	2		3	1	0.15
Bagre marinus		18	58	8	15	10	60	70	86	10/325
Micropterus sp.									1	1/1
Sciaenidae	2	1	8	6	23	10	19	6		6/75
Bairdiella chrysura							4/10	7/9	1/2	12/21
Cynoscion sp.	1						1/2	2	8/8	9/12
Leiostomus xanthurus							2/2	2/2	5/5	9/1

APPENDIX 5 (Continued) □6S,15E

	1	2	3	4	5	6	7	8	9	MNI
Micropogon undulatus							1/3	5/10	1/3	7/16
Pogonias cromis						5	1/3	1		2/9
Sciaenops ocellata	1	3	11	8	13	14	10	1	1	7/62
Stellifer lanceolatus							1/4	1/1		2/5
Mugil sp.	1/3	1	5	3	1/10	9	16/186	5/110	2/68	25/395
Paralichthys sp.	1	1	6	4	16	5	19	24	10	2/76
Siren sp.					1					1/1
Kinosternon sp.		2	2		1			1		1/6
Malaclemys terrapin	2	7	9				3			1/21
Chrysemys sp.		5	2							1/7
Deirochelys reticularia	3							6		1/9
Rallidae	1	1	1				2	1		2/6
Didelphis virginiana	5	6	1		3	4	2	9		3/21
Rodentia							2		1	1/3
Oryzomys sp.								1		1/1
Sylvilagus sp.			2		1	1				1/4
Mustela vison		1								1/1

APPENDIX 5 (Continued) □6S,15E

	1	2	3	4	5	6	7	8	9	MNI
Canis familiaris		1								1/1
Procyon lotor			2	3	1	5	3	1		2/15
Odocoileus virginianus	15	8	9	1	2	53	13	24	1	2/96
Homo sapiens	1								1	1/2
Unidentified fragments										Level Totals
fish	16	80	228	81	235	471	19224	1774	1264	6073
amphibian							3			3
turtle		1	4	1	1	6	16	17	24	70
snake				2			1		2	5
bird	2		4		2	3	3			14
mammal	13				9					22
miscellaneous							32	64	2	100

[1]Screen size: Levels 1-6 1/4 inch; levels 7-9 1/8 inch.

	Fea. #3	Fea. #7	Fea. #11	Fea. #13	Fea. #12	Fea. #23	Feature Profile
Callinectes sp.	10/113	1/1					2/16
Carharhinus sp.							
Rajiformes						1/4	1/10
Dasyatis sp.	1/1						
Lepisosteus sp.	1/3						1/1
Amia calva							
Elops saurus							
Clupeidae		1/3					1/3
Ariidae	5/100		2/2		1/3	1/7	3/38
Arius felis	1/2						
Bagre marinus	3/53				1/2	1/1	2/21
Micropterus sp.							
Sciaenidae	1/13					1/2	1/1
Bairdiella chrysura							
Synoscion sp.							
Leiostomus xanthurus							

APPENDIX 5 (Continued) □6S,15E

	Fea. #3	Fea. #7	Fea. #11	Fea. #13	Fea. #12	Fea. #23	Feature Profile
Micropogon undulatus							
Pogonias cromis							
Sciaenops ocellata	3/7		1/1				
Stellifer lanceolatus							
Mugil sp.	1/36		1/1	1/1	1/9	1/4	1/9
Paralichthys sp.	1/10						1/2
Siren sp.							
Kinosternon sp.	1						
Malaclemys terrapin	1/1						1/1
Chrysemys sp.							
Deirochelys reticularia							
Rallidae							
Deldelphis virginiana	1/1						
Rodentia							
Oryzomys sp.							
Sylvilagus sp.							
Mustela sp.							

APPENDIX 5 (Continued) □6S,15E

	Fea. #3	Fea. #7	Fea. #11	Fea. #13	Fea. #12	Fea. #23	Feature Profile	Unit Total
Canis familiaris								
Procyon lotor				1/1				
Odocoileus virginianus						1/1		
Homo sapiens								

	Fea. #3	Fea.#7	Fea. #8	Fea.#11	Fea.#12	Fea.#13	Fea.#23	Feature Profile	Unit Profile	Total
Unidentified fragments										
fish	1137	7	11	48	44	7	20	125	1399	7472
amphibian										3
turtle								5	5	75
snake								4	4	9
bird				2				3	5	19
mammal	10							6	16	38
miscellaneous								7	7	107

APPENDIX 5: FAUNAL LIST, □18N,0E

Species	Minimum Number of Individuals	Number of Fragments
Decapoda	10	31
Callinectes sp.	92	1586
Carcharhinidae	1	4
Galeocerdo cuvieri	1	95
Sphyrna sp.	1	1
Mylobatoidea	2	213
Aetobates narinari	1	1
Lepisosteus sp.	1	58
Amia calva	1	4
Elops saurus	1	8
Clupeidae	42	1147
Brevoortia sp.	1	1
Ariidae	45	2393
Arius felis	10	58
Bagre marinus	18	490
Opsanus sp.	3	9
Pomatomus saltatrix	1	1
Carangidae	1	2
Sparidae cf. *Lagodon*	1	1
Sciaenidae	14	66
Bairdiella chrysura	37	68
Cynoscion sp.	13	33
Leiostomus xanthurus	33	34

APPENDIX 5 (Continued)□18N,0E

Species	Minimum Number of Individuals	Number of Fragments
Menticirrhus americanus	3	3
Micropogon undulatus	45	138
Pogonias cromis	5	13
Sciaenops ocellata	4	45
Stellifer lanceolatus	2	23
Mugil sp.	84	1434
Prionotus sp.	1	4
Paralichthys sp.	2	61
Kinosternon sp.	4	97
Malaclemys terrapin	3	124
Chrysemys cf. floridana	2	129
Iguanidae	1	1
Anolis carolinensis	2	4
Natrix sp.	1	1
Coluber constrictor	1	1
Ardea herodias wardi	1	1
Buteo lineatus alleni	1	1
Lampropeltis sp.	1	1
Rallidae		
Larus argenticus	1	1
Didelphis virginiana	2	24
Soricidae	2	3
Cryptotis parva	1	2

APPENDIX 5 (Continued) 18N,0E

Species	Minimum Number of Individuals	Number of Fragments
Sylvilagus sp.	2	7
Rodentia	1	8
Sciurus carolinensis	1	5
cf. *Neotoma*	1	1
cf. *Peromyscus*	1	1
Oryzomys sp.	1	2
Peromyscus sp.	1	3
Procyon lotor	2	18
Odocoileus virginianus	1	56
Homo sapiens	1	1

APPENDIX 5: □18N,0E-FAUNAL LIST BY LEVEL

(1 level=5 cm; screen size-1/8 inch)

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Decapoda			1					1		1	4	2	3	2	1 2	2 3
Callinectes sp.	1 3	0 9	1 29	3 45	1 32	0 19	2 50	2 48	2 35	0 17	4 45	2 40	2 27	5 46	3 44	4 46
Carharhinidae																
Galeocerdo cuvieri																
Sphyrna sp.																
Mylobatoidea	6	6	4	6	2	1	4	2	3		4	1	1	1		5
Aetobates narinari																
Lepisosteus sp.					1											
Amia calva								1			1					
Elops saurus																1
Clupeidae	0 1	0 6	0 3	1 16	0 14	6 8	1 13	0 5	0 15	0 8	3 63	0 16	2 42	1 23	1 29	0 38
Brevoortia sp.																
Ariidae	2	2	8	8	6	4	12	8	4	2	12	5	14	16	10	24
Arius felus											1					

APPENDIX 5 (Continued) □18N,0E

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Bagre marinus			2	3	3		1	1		1		1		4	4	3
Opsanus sp.																
Pomatomus saltatrix																
Carangidae																
Sparidae cf. Lagodon															1 1	
Sciaenidae			1	1	1		2			1	3	1		1	1	2
Bairdiella blatysura					2 3		2 3	2		1 2	2 4		1		2 2	2 3
Cynoscion sp.	1	2		1	1 1	1			1 1	1	2 2			2		
Leiostomus xanthurus											w 2	1 1			1 1	
Menticirrhus americanus										1						
Micropogon undulatus				1			1 1				1	1				
Pogonias cromis														1	1	1 1
Sciaenops ocellata	1	2	2		1					1	1					1
Stillifer lanceolatus											2					

APPENDIX 5 (Continued) □18N,0E

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Mugil sp.	0 4	0 12	2 16	2 18	0 20	0 26	1 21	1 20	1 13	6 109	3 51	3 56	2 42	0 41	2 55	
Prionotus sp.																
Paralichthys sp.		3				4	3				3	1	2	1	1	

APPENDIX 5 (Continued) □ 18N,0E

Species	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Decapoda	2 2		1	2 2		1							1			
Callinectes sp.	2 17	2 18	3 48	3 33	2 26	2 41	6 68	4 62	3 77	2 10	3 49	2 35	1 35	1 16	2 45	2 37
Carcharhinidae																3
Galeocerdo curveri																
Sphyrna sp.																1
Mylobatoidea			4	9	3	5	5	8	24	9	10	10	2	1	4	3
Aetobates narinari			4	9	3	5	5									
Lepisosteus sp.									6		5	1	1	4		1
Amia calva																
Elops saurus							1	1		1						
Clupeidae	1 11	0 6	1 66	3 39	3 29	2 53	3 55	2 63	0 42	4 39	1 35	1 19	1 20	0 8	1 8	0 21
Brevoortia sp.																
Ariidae	5	10	57	64	96	77	92	94	78	34	58	38	42	18	41	93
Arius felis			1				4			1		2	1		3	12
Bagre marinus	2	2	20	18	5	11	32	27	14	7	10	7	2 2	1	5	
Opsanus				2			1						3			2

APPENDIX 5 (Continued) □18N,0E

Species	33	34	35	33a	Shell Area #1	Shell Area #2	Shell Area #3	East Baulk	Fea.#20	Fea.#21	Fea.#24
Decapoda								8/26	1/3	1/2	
Callinectes sp.	3/90	0/2				0/3		59/1249	4/47	9/77	17/177
Carharhinidae				1/2				1/4			
Galeocerdo cuvieri	1/92	3						1/95			
Sphyrna sp.								1/1			
Mylibatoidea	45	3	1	2	1	1		2/196		1/2	1/5
Aetobates nannari											
Lepisosteus sp.	17	6						1/47			
Amia calva	1	1						1/44			
Elops saurus	3							1/7	1/1		
Clupeidae	3/106	0/2	0/1	0/8		0/2	1/2	35/939	1/65	1/6	3/99
Brevoortia sp.											
Ariidae	236	218	96	6		3	10	30/1662	2/23	2/11	12/629
Arius felis	17	12	1	1		1		9/57			1/1
Bagre marinus	40	78	88	5		3	3	12/404	2/4	1/1	4/74
Opsanus sp.	1							3/9			

APPENDIX 5 (Continued) □18N,0E

Species	Fea. #25	Fea. #26	Fea. #27	Feature mni/frags	Unit mni/frags
Decapoda				2/5	10/31
Callinectes sp.	3/31	0/5		33/337	92/1586
Carharhinidae					1/4
Galeocerdo cuvieri					1/05
Sphyrna sp.					1/1
Mylibotoidea	1/10			1/17	2/213
Aetobates nannari	1/1			1/1	1/1
Lepisosteus sp.				1/11	1/58
Amia calva					1/4
Elops saurus				1/1	1/8
Clupeidae	1/37	1/1		7/208	42/1147
Brevoortia sp.	1/1			1/1	1/1
Arridae	2/64	1/4		19/731	45/2393
Arius felis				1/1	10/58
Bagre marinus	1/3	1/4		8/86	18/490
Opsanus sp.					3/9

APPENDIX 5 (Continued) □18N,0E

	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Pomatomus saltatrix												1				
Carangidae			1									1				
Sparidae cf. Lagodon																
Sciaenidae	1		1	3	1		2	2	4	2	2	1	2	2	5	2
Bairdiella chrysura	1	1	1 2	1 1	1 2	1	1 2	1 4	1 2	1		2	1 1	1 1		
Cynoscion sp.			1 1	1 2	1		1	1 3	2 2	1						
Lelostomus xanthurus				1 1	2 2		1 1	4 4	2 2		3 4	1 1	1 1			
Menticirrhus americanus																
Micropogon undulatus							1 2	1 14	4	3	1 8	5	1 7	1 5	5	2 4
Pogonias cromis						1	2		1		1 3	1				
Sciaenops ocellata			2	1		1	14	4	1	2						
Stellifer lanceolatus										1						
Mugil sp.	0 24	0 25	2 56	2 49	1 22	4 25	3 27	2 32	1 19	1 22	2 11	2 16	2 19	5 14	1 25	0 17

APPENDIX 5 (Continued) □18N,0E

Species	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Prionotus sp.													4			
Paralichthys sp.	1		2		1	2		2	2		1	2		1		1

APPENDIX 5 (Continued) □18N,0E

Species	33	34	35	33a	Shell Area #1	Shell Area #2	Shell Area #3	East Baulk	Fea.#20	Fea.#21	Fea.#24
Pomatomus saltatrix								1/1			
Carangidae								1/2			
Sparidae cf. Lagodon								1/1			
Sciaenidae	11	1						11/56	1/1		1/7
Bairdiella chrysura	8/10	1/1		1				30/53	1/1	3/6	2/7
Cynoscion sp.	1/4							10/27		1/2	1/3
Leiostomus xanthurus	8/8							29/30		1/1	3/3
Menticirrhus americanus								1/1			
Micropogon undulatus	7/47	2/6		1		1		39/119		1/1	2/15
Pogonias cromis								3/10			2/3
Sciaenops ocellata	4							3/40			1/5
Stellifer lanceolatus								2/3			
Mugil sp.	8/115	0/3	1/6	0/1		0/5	0/2	60/1041	8/164	4/87	9/90
Prionotus sp.								1/4			
Paralichthys sp.	0/13	1	2					2/50			

APPENDIX 5 (Continued) □18N,0E

Species	Fea. #25	Fea. #26	Fea. #27	Feature mni/frags	Unit mni/frags
Pomatomus saltatrix					1/1
Carangidae					1/2
Sparidae cf. Lagodon					1/1
Sciaenidae	1/2			3/10	14/66
Bairdiella chrysura	1/1			7/15	37/68
Cynoscion sp.	1/1			3/6	13/33
Leiostomus xanthurus				4/4	33/34
Menticirrhus americanus				2/2	3/3
Micropogon undulatus		3/3		6/19	45/138
Pogonias cromis				2/3	5/13
Sciaenops ocellata				1/5	4/45
Stellifer lanceolatus					2/3
Mugil sp.	2/35	1/17		24/393	84/1434
Prionotus sp.					1/4
Paralichthys sp.	1/2			1/11	2/61

APPENDIX 5 (Continued) □18N,0E

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Kinosternon sp.							1						1		1			
Malaclemys terrapin			2	2	2	1		1						1				
Chrysemys cf. floridana												2				1		
Deirochelys reticularia																		
Iguanidae																		
Anolis carolinensis												1						
Natrix sp.		1																
Coluber sp.							3		1									
Lampropeltis sp.																		
Ardea herodias wardi																		
Buteo lineatus allenI																		
Rallidae					1	1												
Larus argenticus																		
Didelphis virginiana			1				2				1				1	1		
Soricidae																		
Cryptotis parva					1													
Sylvilagus sp.			6															

APPENDIX 5 (Continued) □18N,0E

Species	19	20	21	22	23	24	25	26	27	28	29
Kinosternon sp.		1									
Malaclemys terrapin	36					1	4				
Chrysemys cf. floridana				46	7	2		5	35	9	18
Deirochelys reticularia											
Iguanidae	1										
Anolis carolinensis											
Natrix sp.											
Coluber sp.											
Lampropeltis sp.											
Ardea herodias wardi											
Buteo lineatus alleni											
Rallidae	1				1		1				
Larus argenticus											
Didelphus virginiana		2			3	4	3	2			
Soricidae											
Cryptotis parva					1						
Sylvilagus sp.											

APPENDIX 5 (Continued) □18N,0E

	30	31	32	33	34	35	33a	Shell Area #1	Shell Area #2	Shell Area #3	720 EB	mni/frags
Kinosternon				16								2/20
Malaclemys terrapin												2/50
Chrysemys cf. floridana	1		1									2/127
Iguanidae												1/1
Anolis carolinensis												1/1
Natrix sp.												1/1
Coluber constrictor												1/4
Lampropeltis sp.									4			1/4
Rallidae			1									2/6 lt. ulna
Larus argentious											1	1/1
Didelphis virginiana				1								2/21
Soricidae				2/3								2/3
Cryptotis parva												1/2
Sylvilagus sp.			1									2/7
Rodentia				2			1					1/8

APPENDIX 5 (Continued) □ 18N,0E

	Fea.#20	Fea.#21	Fea.#24	Fea.#25	Fea.#26	Fea.#27	Feature total	Unit Total Minimum Number of Indivs.
Kinosternon	1/13		1/32		1/32			4/97
Malaclemys terrapin		1/4	1/64	1/6				3/124
Chrysemys cf. floridana	1/1	1/1						2/129
Iguanidae								1/1
Anolis carolinensis	1		1/1		1/26			2/4
Natrix sp.								1/1
Coluber constrictor								1/4
Lampropeltis sp.								1/4
Ardea herodias wardi			1/1					1/1
Buteo lineatus alleni				1/1				1/1
Rallidae			1/1	3/6				
Larus argenticus								1/1
Didelphis virginiana	1/1	1/2						2/24
Soricidae								2/3
Cryptotis parva								1/2
Sylvilagus sp.								2/7
Rodentia								

APPENDIX 5 (Continued) □18N,0E

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Rodentia																		
Sciurus carolinensis																		
cf. *Neotoma*																		
cf. *Peromyscus*											1							
Oryzomys sp.																		
Peromyscus sp.																1		
Procyon lotor	4				1		1	1								1		
Odocoileus virginianus	1		1						1		6			3		2		1
Homo sapiens																		
Unidentified elements																		
fish	13	65	43	76	98	50	162	86	184	75	430	161	212	191	134	259	51	73
amphibians	1																	
snake		5		1	4	1		1			1					2		2
turtle	17	16	13	10	6	2	2	8	7	1	5		1		1	3		2
bird				7		2	1						1	1		1		1
mammal	8	10	12	3	3		4	2	5	1	17	9	8	1	5	8		5
miscellaneous	45	41	57	27	23	9		22	3	3			14	8	12	5		10

APPENDIX 5 (Continued) □18N,0E

Species	19	20	21	22	23	24	25	26	27	28	29
Rodentia		1			1	2	1				
Sciurus carolinensis											
cf. *Neotoma*											
cf. *Peromyscus*											
Oryzomys sp.			1								
Peromyscus sp.	1			1							
Procyon lotor	6	1	1								
Odocoileus virginianus	8	1			2		1	10			
Homo sapiens											
Unidentified elements											
fish	326	289	202	299	377	508	257	218	271	287	333
amphibians				1		1		2			
snake			2	1			1				
turtle		4	3		7	8	8	4	16	4	9
bird	1	2		3	1		1		4	1	
mammal	12	13	2	5	10	14	4	5	3		
miscellaneous		4	8	14	70	15			3	3	4

APPENDIX 5 (Continued) □18N,0E

Species	30	31	32	33	34	35	33a	Shell Area #1	Shell Area #2	Shell Area #3	720 EB	mni/frags
Sciurus carolinensis				4		1						1/5
cf. Neotoma				1								1/1
cf. Peromyscus												1/1
Oryzomys sp.												1/2
Peromyscus sp.								1				1/3
Procoyon lotor							1					2/17
Odocoileus virginianus		7	2									1/46
Homo sapiens											1	1/1
Unidentified elements												General level total
fish	133	251	253	1925	773	191	57	2	37	33		8973
amphibian				1								6
snake	2			8	10	15	2		5	1		62
turtle	4	21	4	38	33	11	5					273
bird		1		8								36
mammal		2	2	46	4				7			230
miscellaneous	1			10	4	13			16			436

APPENDIX 5 (Continued) □18N,0E

	Fea.#20	Fea.#21	Fea.#24	Fea.#25	Fea.#26	Fea.#27	Feature total	Unit Total Minimum Number of Indivs.
Sciurus carolinensis								1/5
cf. Neotoma								1/1
cf. Peromyscus								1/1
Oryzomys sp.								1/2
Procoyon lotor	1/1							2/18
Odocoileus virginianus	1/2	1/3	1/3	1/2				1/56
Homo sapiens								1/1
Unidentified elements								Unit Total
fish	472	230	1582	379	110	6	2863	11836
amphibian								6
snake								62
turtle	11	43	1	2			57	330
bird			27	4			31	67
mammal	7	7	10	1			25	255
miscellaneous	14	9	31	6		4	64	400

APPENDIX 5: □19.5N,2W-FAUNAL LIST

(no screening)

Species	Minimum Number of Individuals	Number of Fragments
Callinectes sp.	4	28
Ariidae	3	17
Bagre marinus	2	12
Cynoscion sp.	1	1
Sciaenops ocellata	1	2
Mugil sp.	1	1
Malaclemys terrapin	1	7
Chrysemys sp.	1	22
Deirochelys reticularia	1	1
Odocoileus virginianus	1	7

APPENDIX 5: □ 9S,15E-FAUNAL LIST

(Levels 1-3; 1 Level=15 cm)

Species	Minimum Number of Individuals	Number of Fragments
Callinectes sp.	2	12
Rajiformes	1	4
Clupeidae	1	1
Ariidae	12	265
Arius felis	1	11
Bagre marinus	8	130
Sciaenidae	3	45
Cynoscion sp.	1	4
Pogonias cromis	1	1
Sciaenops ocellata	2	15
Mugil sp.	4	99
Paralichthys sp.	2	38
Kinosternon sp.	1	5
Malaclemys terrapin	2	33
Rallidae	1	3
Didelphis virginiana	1	13
Sylvilagus sp.	1	1
Mustela vison	1	4
Canis familiaris	1	1
Procyon lotor	1	9
Odocoileus virginianus	1	20
Homo sapiens	1	40

APPENDIX 5: □18N,3E-FAUNAL LIST

Species	Minimum Number of Individuals	Number of Fragments
Decapoda	4	13
Callinectes sp.	253	3630'
Chondrichthys	1	1
Carcharhinidae sp.	1	1
Rajiformes	2	130
Lepisosteus sp.	1	10
Amia calva	1	1
Elops saurus	1	14
Clupeidae	114	3383
Siluriformes	11	1231
Ictalurus sp.	5	13
Ariidae	30	156
Arius felis	10	15
Bagre marinus	21	285
Opsanus sp.	2	10
Pomatomus saltatrix	1	1
Carangidae	1	1
Sciaenidae	8	54
Bairdiella chrysura	35	61
Cynoscion sp.	15	48
Leiostomus xanthurus	20	21
Menticirrhus americanus	3	4
Micropogon undulatus	17	71
Pogonias cromis	1	5

APPENDIX 5 (Continued)-□18N,3E

Species	Minimum Number of Individuals	Number of Fragments
Sciaenops ocellata	8	72
Stellifer lanceolatus	1	4
Mugil sp.	48	1131
Prionotus sp.	1	1
Paralichthys sp.	2	103
Kinosternon sp.	2	68
Malaclemys terrapin	3	105
Chrysemys cf. floridana	1	29
Deirochelys reticularia	1	14
Iguanidae	1	1
Anolis carolinensis	2	3
Phalacocorax auritus auritus	1	1
Rallidae	2	3
Didelphis virginiana	2	15
Cryptotis parva	1	1
Sylvilagus sp.	1	15
Rodentia	2	10
Glaucomys volans	1	1
cf. Peromyscus	2	4
Peromyscus sp.	1	1
Sigmodon hispidus	1	1
Lutra canadensis	1	2

APPENDIX 5 (Continued)-□18N,3E

Species	Minimum Number of Individuals	Number of Fragments
Mustela vison	1	2
Canis familiaris	1	1
Procyon lotor	1	1
Odocoileus virginianus	2	84
Homo sapiens	1	1

APPENDIX 5 (Continued) □18N,3E

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Decapoda						1	2				1	1				1
Callinectes sp.	0 1	0 9	0 9	2 15	0 7	0 20	1 9	2 31	1 28	3 48	5 39	2 30	2 41	3 47	2 49	12 191
Carcharhinidae																
Chondrichthys		1														
Mylobatoidea	7	5	3	4	2	3	1	6	6	8	1		4	3	2	6
Lepisosteus sp.					1											1
Amia calva																
Elops saurus																
Clupeidae	1 9	1 39	2 60	11 151	5 111	6 225	4 93	11 279	14 349	19 596	2 137	4 88	5 144	1 94	4 215	2 88
Siluriformes	2	3	3	9	6	9	7	12	16	20	19	18	47	28	47	94
Ictalurus sp.																
Ariidae		2	1	3					2	4		1	3	5	5	4
Arius felis		1														1
Bagre marinus	4	2	3	1	1	1	3	2	3	10	4	7	8	19	9	10

APPENDIX 5 (Continued) □18N,3E

Species	17	18	19	20	21	22	23	24	25	26	27	28	29
Decapoda	2			1	1	1							
	25	16	14	14	9	4	7	1	2	1	0	0	0
Callinectes sp.	434	259	192	213	183	43	68	23	24	14	10	3	3
Carcharhinidae													
Chondrichthys													
Mylobatoidea		4	5	7	4	2	4	2		3	4	4	
Lepisosteus sp.	1	3	1										
Amia calva							1						
Elops saurus			1	4	4				1	1			
	4	2	1	3	1	1	0	0	0	0	0		0
Clupeidae	58	23	30	43	45	8	13	10	9	11	5		1
Siluriformes	150	78	81	69	100	24	42	21	14	17	14	16	7
Ictalurus sp.	1			2	3	2	3	1					
Ariidae	7	2	4	9	10	2	4	1	1	1	3	3	
Arius felis		1	1	3	1		1	1		1		1	
Bagre marinus	14	8	6	19	24	5	9	2	1	2	2	4	9

APPENDIX 5 (Continued) □18N,3E

Species	30	31	32	General Level Total		Feature # 18	Feature # 19	Feature Total	Unit Total
Decapoda				4	11	1/1	1/1	2/2	4/13
Callinectes sp.	0 3		0 2	126	2048	107/1456	1/5	108/1461	253/3630
Carcharhinidae				1	1			---	1/1
Chondrichthys sp.				1	1			---	1/1
Mylobatoidea				2	110	1/13		1/13	2/130
Lepisosteus sp.				1	7	1/1		1/1	1/10
Amia calva				1	1				1/1
Elops saurus	1			1	12				1/14
Clupeidae		0 1	0 1	104	2936	9/373	1/64	10/437	114/3383
Siluriformes	1	21	30	8	994	3/233	1/3	4/236	11/1231
Ictalurus sp.				5	12	1/1		1/1	5/13
Ariidae	1	4	4	27	86	3/18	1/1	4/19	30/156
Arius felis				10	12	1/3		1/3	10/15
Bagre marinus	2	25	8	17	227	4/25		4/25	2/285
Opsanus sp.				1	4	1/1		1/1	2/10
Pomatomus saltatrix				1	1				1/1
Carangidae				1	1				1/1

APPENDIX 5 (Continued)

□18N,3E

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Opsanus sp.						1										
Pomatomus saltatrix																
Carangidae																
Sciaenidae			2	1	4	2	1	3	2	3	2		3			2
Bairdiella chrysura		1 3	1		1			1 1	1 1	3 3	2 2		1 1		2 6	1 5
Cynoscion sp.									2	1 4	1 1	2	1 1	1	2 3	
Leiostomus xanthurus				1 1	1 1	1 1		1 1	3 3	2 2		2 2	1 1	2 2	1 1	
Micropogon undulatus						1				7	3 3	1 1	1 4	2	1 3	1
Menticirrhus americanus						1	1									
Pogonias cromis																
Sciaenops ocellata	1	2	2	2		4	1		1	3		1	1	1		2
Stellifer lanceolatus				1												
Mugil sp.	0 3	3 19	1 18	0 37	2 33	0 61	2 33	2 58	1 40	1 78	0 35	1 8	0 32	2 15	0 48	2 28
Prionotus sp.													1			

APPENDIX 5 (Continued □18N,3E

Species	17	18	19	20	21	22	23	24	25	26	27	28	29
Opsanus sp.			1						1	1			
Pomatomus saltatrix			1										
Carangidae				1									
Sciaenidae		2	4	3	2					2	1	3	
Bairdiella chrysura	1 2	3 5	1 3	2 4	1 3		3 3	1 1		1 2	2 2		
Cynoscion sp.	1 3	1 2	1 6	 2	 1		1 2		1 2	 1	1 1		
Leiostomus xanthurus		1 1	1 1					1 1			1 1		
Micropogon undulatus	1 7	 2	 3	1 5	 1	 2		1 2		 4	1 2	1 3	
Menticirrhus americanus		1						1					
Pogonias cromis				1	1					1	1 1		
Sciaenops ocellata	11	3		2	9	1	1		1				
Stellifer lanceolatus													
Mugil sp.	5 39	7 64	2 38	2 40	3 54	0 10	2 41	0 12	1 18	0 17	2 8	0 2	0 2
Prionotus sp.													

APPENDIX 5 (Continued) □18N,3E

Species	30	31	32	General Level Total		Feature # 18	Feature # 19	Feature Total	Unit Total
Sciaenidae				6	42	2/12		2/12	8/54
Bairdiella chrysura				27	49	8/12		8/12	35/61
Cynoscion sp.	1			11	35	4/10		4/10	15/48
Leiostomus xanthurus	1			18	19	1/1		1/1	20/21
Micropogon undulatus	1	1		15	55	2/14		2/14	17/71
Menticirrhus americanus				3	4				3/4
Pogonias cromis				1	4	1/1		1/1	1/5
Sciaenops ocellata				7	60	1/6		1/6	8/72
Stellifer lanceolatus				7	1	1/3		1/3	1/4
Mugil sp.	0 1	0 1	1	41	894	3/180	1/30	4/210	48/1131
Prionotus sp.				1	1				1/1
Paralichthys sp.		1		2	57	1/26	1/2	2/28	2/103
Kinosternon sp.				2	53	1/15		1/15	2/68
Malaclemys terrapin				2	34	1/71		1/71	3/105
Chrysemys cf. floridana				1	29				1/29

APPENDIX 5 (Continued) □18N,3E

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Paralichthys sp.					1		1	2		2	1	1	3	1	4	2
Kinosternon sp.	12	3	5			5		7	1	5	1		2	1		6
Malaclemys terrapin	3								1						17	1
Chrysemys cf. floridana																
Deirochelys reticularia													14			
Iguanidae																
Anolis carolinensis				1												
Phalacocorax auritus																
Rallidae													2			
Didelphis virginiana										1		1	3	3		1
Cryptotis parva											1					
Sylvilagus sp.							1									
Rodentia						2				2						
Glaucomys volans	1															
cf. Peromyscus			1	1		2										
Peromyscus sp.		1														

APPENDIX 5 (Continued) □18N,3E

Species	17	18	19	20	21	22	23	24	25	26	27	28	29
Paralichthys sp.	4	5	2	8	6	1	1	3	6	1	1		
Kinosternon sp.	3		1	1									
Malaclemys terrapin	3	1	1	2	4		1						
Chrysemys cf. *floridana*					4		14			1			
Deirochelys reticularia													
Iguanidae													
Anolis carolinensis	1												
Phalacocorax auritus													
Rallidae	1												
Didelphis virginiana					5		1						
Cryptotis parva													
Sylvilagus sp.													
Rodentia										2		1	1
Glaucomys volans													
cf. *Peromyscus*													
Peromyscus sp.													

APPENDIX 5 (Continued) □18N,3E

Species	30	31	32	General Level Total		Feature # 18	Feature # 19	Feature Total	Unit Total
Deirochelys reticularia				1	14				1/14
Iguanidae									1/1
Anolis carolinensis				1	2	1/1		1/1	2/3
Phalacocorax auritus						1/1		1/1	1/1
Rallidae				2	3	2/3		2/3	2/3
Didelphis virginiana				2	15				2/15
Cryptotis parva				1	1				1/1
Sylvilagus sp.				1	1	1/14		1/14	1/15
Rodentia		1		2	9				2/10
Glaucomys volans				1	1				1/1
cf. Peromyscus				2	4				2/4
Peromyscus sp.				1	1				1/1
Sigmodon hispidus				1	1				1/1
Lutra canadensis				1	2				1/2
Mustela vison				1	2	1/1		1/1	1/2
Canis familiaris							1/1	1/1	1/1

APPENDIX 5 (Continued) □18N,3E

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Sigmodon hispidus	1															
Lutra canadensis																
Mustela vison															1	
Canis familiaris																
Procyon lotor		1														
Odocoileus virginianus		2		2		1			9	19	2	3			2	6
Homo sapiens																
Unidentified elements																
fish	23	78	97	232	219	317	147	374	450	853	316	168	297	229	571	448
amphibians											1				1	
snakes			1	5			1	2		6			1	1	2	
turtle	8	15	13	5	9	2	4	2	5	6	3	2	6	8	5	11
bird				3			3			2	2					14
mammal	8	6		10	2	8		10	28	24	5	8	18	25	20	23
miscellaneous	52	38	44	103	48	10	1	11		5	3		1		1	15

APPENDIX 5 (Continued) □18N,3E

Species	17	18	19	20	21	22	23	24	25	26	27	28	29
Sigmodon hispidus													
Lutra canadensis				2									
Mustela vison													
Canis familiaris													
Procyon lotor													
Odocoileus virginianus	5						1						1
Homo sapiens								1					
Unidentified elements													
fish	682	580	395	511	539	148	294	140	139	159	186	113	28
amphibians										1	1		
snakes													
turtle	15	8	10	11	15	5	8	4	3	4	3		
bird	8	2								8	1	1	
mammal	27	4		27	11	2	8	3		2	4		
miscellaneous	11	3	4	3	18		2	3	3	3		2	

APPENDIX 5 (Continued) □18N,3E

Species	30	31	32	General Level Total		Feature # 18	Feature # 19	Feature Total	Unit Total
Procyon lotor				1	1				1/1
Odocoileus virginianus			1	2	53	1/21	1/5	2/26	2/84
Homo sapiens				1	1				1/1
Unidentified elements									
fish	42	71	58	9346		1610	93	1103	10449
amphibians				4				--	4
reptiles (snakes)				19		4	1	5	24
turtles	1	1		192		22	1	23	215
bird				44		5	1	6	50
mammal				283		72	8	80	363
miscellaneous		8	2	394		15	1	16	410

APPENDIX 5: □FAUNAL LIST, TEST 1

Species	Minimum Number of Individuals	Number of Fragments
Callinectes sp.	2	34
Rajiformes	1	11
Sphyrna sp.	1	1
Lepisosteus sp.	1	21
Clupeidae	5	116
Ariidae	11	202
Arius felis	1	4
Bagre marinus	3	85
Sciaenidae	2	25
Bairdiella chrysura	3	5
Cynoscion sp.	7	10
Leiostomus xanthurus	2	2
Micropogon undulatus	24	42
Pogonias cromis	1	2
Sciaenops ocellata	1	12
Stellifer lanceolatus	1	1
Mugil sp.	5	135
Paralichthys sp.	1	12
Kinosternon sp.	1	11
Malaclemys terrapin	1	6
Chrysemys sp.	1	2
Didelphis virginiana	1	1
Blarina brevicauda	1	1

APPENDIX 5 (Continued)-Test 1

Species	Minimum Number of Individuals	Number of Fragments
Microtinae cf. Neofiber	1	8
Neofiber alleni	1	1
Scalopus aquaticus	1	2
Sylvilagus sp.	1	2
Sigmodon dispidus	1	2
Procyon lotor	1	13
Canis familiaris	1	1
Odocoileus virginianus	1	8

APPENDIX 5: 9GN76-FAUNAL LIST BY LEVELS AND UNIT TOTALS

	Test I (1 level=15 cm) (screen size 3/4 x 3/8 inch) (sceeen size 1/8 inch)									
	1	2	3	4	3	4	Fea.#1	Shell Area #1	Shell Area #2	Unit Total
Decapoda										
Callinectes sp.					2/25	7			2	2/34
Sphyrna sp.		1								1/1
Rajiformes					9	2				1/11
Lepisosteus sp.					17	4				1/21
Elops saurus										
Clupeidae					3/86	1/26		2	2	4/116
Ariidae	2/2			5/15	5/115	3/60			2/10	11/202
Arius felis		1				3				1/4
Bagre marinus		1	1	8	37	3/33		2	3	3/85
Opsanus sp.										
Carangidae										
Archosargus sp.										
Sciaenidae				7	15	3				2/25
Bairdiella chrysura					3/5					3/5
Cynoscion sp.					6/7	3/3				7/10

APPENDIX 5 (Continued)

	Test 1 (1 level=15 cm) (screen size 3/4 x 3/8 inch)				(screen size 1/8 inch)					
	1	2	3	4	3	4	Fea.#1	Shell Area #1	Shell Area #2	Unit Total
Leiostomus xanthurus					2/2					3/3
Micropogon undulatus					24/32	6/10				24/42
Pogonias cromis					1	1				1/2
Scianeops ocellata			1	8	1	1	1			1/12
Stellifer lanceolatus					1					1/1
Mugil sp.				1	5/96	2/32		1	5	5/135
Paralichthys sp.					12					1/12
Anolis carolinensis										
Kinosternon sp.				1	6	4				1/11
Malaclemys terrapin		4				2				1/6
Chrysemys sp.				2						1/2
Rallidae										
Didelphis virginiana						1				1/1
Soricidae										
Blarina brevicauda					1					1/1

APPENDIX 5 (Continued)

	Test 1 (1 level=15 cm) (screen size 3/4 x 3/8 inch)				(screen size 1/8 inch)					
	1	2	3	4	3	4	Fea.#1	Shell Area #1	Shell Area #2	Unit Total
Scalopus aquaticus						2				1/2
Sylvilagus sp.	2									
Rodentia										
Microtinae cf. Neofiber					6	2				1/8
cf. Peromyscus										
Neofiber alleni					1					1
Sigmodon hispidus		1								1

APPENDIX 5 (Continued)

	Test 1									
	1	2	3	4	3	4	Fea.#1	Shell Area #1	Shell Area #2	Unit Total
Canis familiaris		1								1/1
Procyon lotor	3	4			5			1		1/13
Odocoileus virginianus	3	1			1	3				1/8
Unidentified elements										
fish	2		7	8	1184	235				1436
snake										
turtle			1	3						4
Bird		1								1
mammal	3	7	3	4	31	5				53
miscellaneous					24	6				30

APPENDIX 5: FAUNAL LIST, □5S, 30E

Species	Minimum Number of Individuals	Number of Fragments
Decapoda	1	1
Callinectes sp.	3	120
Rajiformes	1	83
Lepisosteus sp.	1	51
Elops saurus	1	5
Clupeidae	31	769
Ariidae	28	729
Arius felis	8	43
Bagre marinus	17	126
Opsanus sp.	1	1
Carangidae	1	1
Archosargus sp.	1	1
Sciaenidae	10	57
Bairdiella chrysura	2	53
Cynoscion sp.	14	45
Leiostomus xanthurus	11	13
Micropogon undulatus	71	145
Pogonias cromis	2	19
Sciaenops ocellata	4	16
Stellifer lanceolatus	13	24
Mugil sp.	30	980
Paralichthys sp.	3	99
Kinosternon sp.	1	4

APPENDIX 5 (Continued)□5S,30E

Species	Minimum Number of Individuals	Number of Fragments
Malaclemys terrapin	1	83
Chrysemys sp.	1	1
Rallidae	1	5
Didelphis virginiana	1	4
Soricidae	1	1
Blarina brevicauda	1	1
Sylvilagus sp.	1	2
Rodentia	1	3
cf. Peromyscus	1	1
Sigmodon hispidus	1	1
Procyon lotor	1	6
Odocoileus virginianus	1	19

APPENDIX 5

□5S,30E (1 level=5 cm)
(screen size 1/8 inch)

	1	2	3	4	5	6	7	8	9	10	11	12	Fea.#2	Unit Total
Decapoda						1								1/1
Callinectes sp.	1/1	3	9	11	19	1/23	21	10	1/16	2	1/1	1/4		3/20
Sphyrna sp.														
Rajiformes	8	8	4	2	13	22	6	7	11	2				1/83
Lepisosteus sp.		1				3	13	3	20	5	6			1/51
Elops saurus							3	1						1/5
Clupeidae	5	7	1/23	1/16	5/177	12/279	9/218	1/14	2/23	5	1		1	31/769
Ariidae	2/24	2/29	3/82	3/32	7/62	12/243	2/90	3/97	4/59	6	1		4	28/729
Arius felis	2/4	2/2	2		10	2/22	2/2	1						8/43
Bagre marinus	2	4	2/3	1	7/33	4/25	5	2/33	17	1	1		1	17/126
Opsanus sp.			1											1/1
Carangidae						1								1/1
Archosargus sp.					1									1/1
Sciaenidae	1		7		5/10	7	3/9	2	3/16	3/5				10/57
Bairdiella chrysura	1	2	4/6		5/7	4/8	4/5	3/4	7/16	2/2			2	24/53
Cynoscion sp.	2		1		5	4/9	3/6	1	12/18	2	1			14/45

APPENDIX 5 (Continued)

	□5S,30E (1 level=5 cm) (screen size 1/8 inch)													
	1	2	3	4	5	6	7	8	9	10	11	12	Fea.#2	Unit Total
Leiostomus xanthurus				1/1	2/2	1/2	5/5		3/3					11/13
Micropogon undalatus					2/3	7/7	8/12	11/20	48/82	8/13	5/7		1	71/145
Pogonias cromis	4	1	4	2	2	1		1		1	1			2/19
Sciaenops ocellata		2	3/4	1	4	3			2	1				4/16
Stellifer lanceolatus			1		2	2/4	2		11/13				2	13/24
Mugil sp.	21	1/41	2/94	1/58	6/255	8/230	8/137	3/39	2/84	9	7	3	2	30/980
Paralichthys sp.	6	2	2/16	7	16	27	19	1	5					3/99
Anolis carolinensis											1			1/1
Kinosternon sp.				1					3					1/4
Malaclemys terrapin			1	1	1	61	13	4	2					1/83
Chrysemys sp.						1								1/1
Rallidae		1				1			3					1/5
Didelphis virginiana					1	1	1				1			1/4
Soricidae						1								1/1

APPENDIX 5 (Continued)

	□5S,30E (1 level=5 cm) (screen size 1/8 inch)													
	1	2	3	4	5	6	7	8	9	10	11	12	Fea.#2	Unit Total
Blarina brevicauda									1					1/1
Scalopus aquaticus														
Sylvilagus sp.						1	1							1/2
Rodentia						1		1		1				1/3
Microtinae cf. *Neofiber*														
cf. Peromyscus			1											1/1
Neofiber alleni														
Sigmodon hispidus										1				1/1

APPENDIX 5 (Continued) □ 5S,30E

	1	2	3	4	5	6	7	8	9	10	11	12	Fea.#2	Unit Total
Canis familiaris														
Procyon lotor	3	1					1		1					1/6
Odocoileus virginianus			2	3	4		3	1	5				1	1/19
Unidentified elements														
fish	145	360	673	151	1177	1162	767	317	649	124	46	11		5552
snake														
turtle	20	19	28	4	35		12	6	16	1				141
bird														
mammal	15	15	12		10	26	20	24	56	2	3			183
miscellaneous			10	5	31	2	1	2	2					55

APPENDIX 5: MARSH EXCAVATION UNITS-FAUNAL LIST

	MNI/FRAGMENTS □45S,15E	□0N,58E	□24S,24E	□42S,24W	□30S,12W	□30S,3W	□15S,6W	□33S,15E	□33S,12E
Lepisosteus sp.			1/3	1/4	1/2				
Amia calva				1/1					
Ariidae			2/6	1/2	1/2	1/3	1/1	1/2	
Bagre marinus			1/16	1/12	1/10	1/4		1/3	
Sciaenidae			1/12	1/14	1/2			1/3	
Micropogon undulatus	1/1			5/8	1/1			/100	
Pogonias cromis			1/5		1/2	1/3		1/1	
Sciaenops ocellata	1/5		1/5						
Archosargus sp.			1/1						
Mugil sp.			1/1						
Paralichthys sp.			1/1	1/2					
Alligator mississipiensis								1/1	
Chelydra serpentina								2/17	
Kinosternon sp.			1/1	1/1			1/4	1/4	
Terrapene carolina							1/1		
Malaclemys terrapin			1/21	3/36	1/3		1/13	1/14	

APPENDIX 5 (Continued)

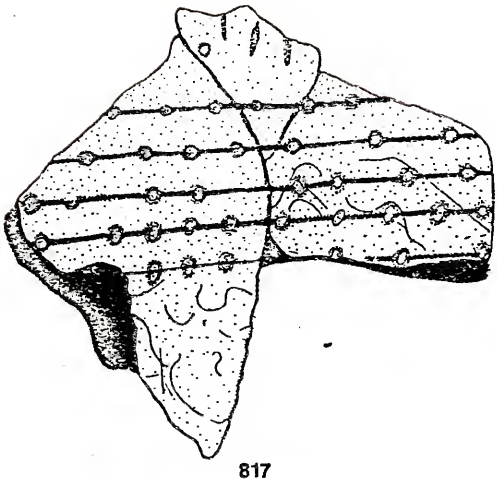
	MNI/FRAGMENTS								
	□45S,15E	□0N,58E	□24S,24E	□42S,24W	□30S,12W	□30S,3W	□15S,6W	□33S,15E	□33S,12E
Chrysemys cf. floridana					1/4				
Deirochelys reticularia				1/2	1/5	1/1			
Rallidae				1/1	1/1				
Didelphis virginiana				1/4					1/1
Sylvilagus sp.					1/3				
Rodentia									
Canis familiaris	1/2			1/5					
Procyon lotor		1/3			1/3			1/6	1/4
Odocoileus virginianus	1/1		1/16	1/8	1/11	5/62	1/4	1/4	2/75
Homo sapiens			1/1						
Unidentified elements									
fish				20	6	3	1		19
turtle				29	1	28	2	7	25
mammal	16		10	32	16	11	9	3	21
miscellaneous	13		6	72	9	12	36	4	64

APPENDIX 5 (Continued)

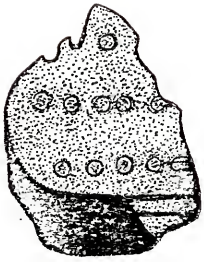
	MNI/FRAGMENTS	
	◻27S,21E	◻27S,18E
Chrysemys cf. *floridana*		
Deirochelys reticularia		
Rallidae		
Didelphis virginiana		
Sylvilagus sp.		
Rodentia		
Canis familiaris		
Procyon lotor	1/2	1/1
Odocoileus virginianus		1/1
Homo sapiens		
Unidentified elements		
fish		
turtle		4
mammal	1	3
miscellaneous		

APPENDIX 6

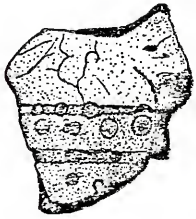
ILLUSTRATIONS: DECORATED FIBER-TEMPERED CERAMICS



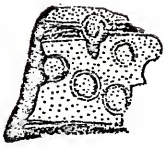
817



11



706



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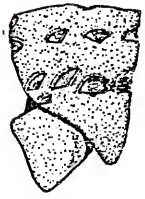
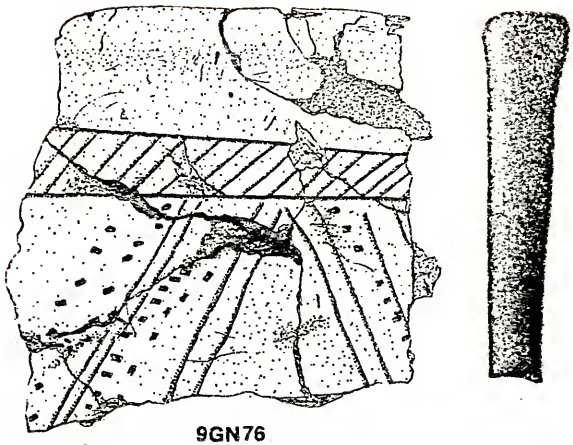


50

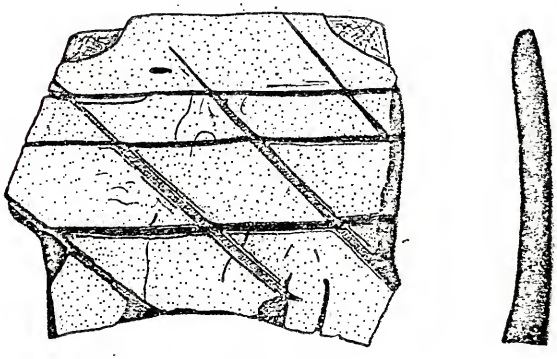
706

9GN76
67

FIGURE 8. Decorated Fiber-Tempered Ceramics.



9GN76
3



746

13 817

FIGURE 9. Decorated Fiber-Tempered Ceramics.

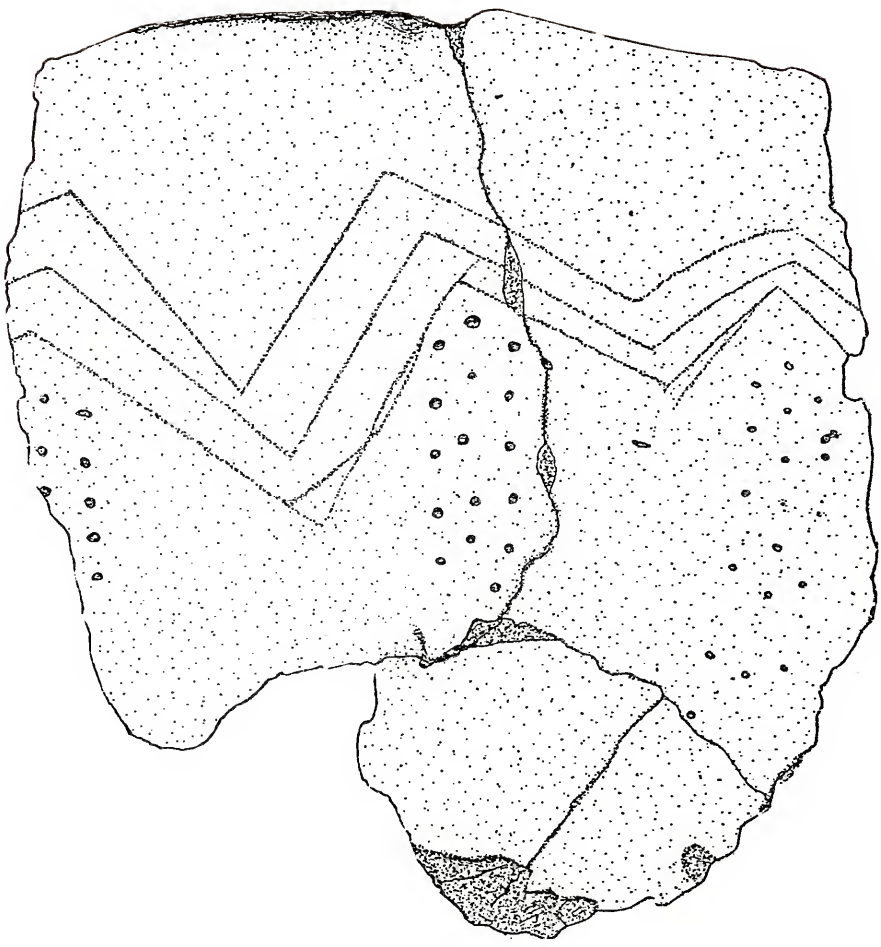


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Figure 10: Decorated Fiber-Tempered Ceramics

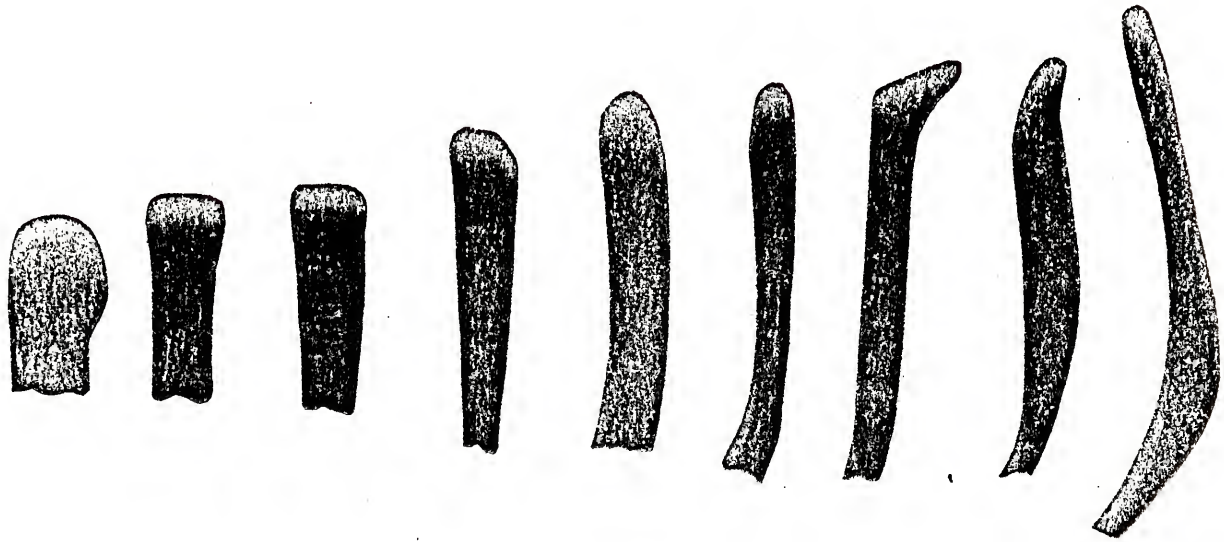


FIGURE 11. Rim Forms from Fiber-Tempered Sherds.

APPENDIX 7

CERAMIC INVENTORY

APPENDIX 7

Field Specimen Number	Level	Number Sherds	Fiber-tempered				Weight in Grams	Paste Fragments	Weight in Grams	Total Weight in Grams
			Plain	Decorated	Body	Rim				
9GN57 ◻9S,15E: Ceramic Analysis (Levels are 15 cm)										
4	1	4	4		4		62.9	15	25.3	88.2
9	2	19	19		19		131.0	29	30.2	161.2
61	3	7	5	2	3	4	71.0	22	23.7	94.7
50	3	18	16	2	14	4	285.7	90	95.7	381.4
8	Fauna concentration	1	1		1		20.0			20.0
48	Fea. #14	19	19		18	1	377.7	108	87.3	465.0

APPENDIX 7 (Continued)

Field Specimen Number	Level	Fiber-tempered Number Sherds	Plain	Decorated	Body	Rim	Weight in Grams	Grit-tempered Number Sherds	Plain	Decorated	Body	Rim	Weight in Grams	Paste Fragments	Weight in Grams	Total Sherds	Total Weight (gms)
								◘ 18N,0E: Ceramic Analysis-General Levels (1 Level = 5 cm) (Continued)									
606	24	6	6		5	1	30.2							19	4.8	6	35.0
613	25	4	2	2	2		123.3							8	1.9	4	125.2
619	26	1	1		1		7.0							8	1.0	1	8.0
620	27	14	13	2	11	3	155.3							39	9.8	14	165.1
624	28	5	4	1	5		74.7							60	13.7	5	88.4
634	29	12	12		12		135.3							45	15.3	12	150.6
659	30	1	1		1		22.0							10	1.0	1	23.0
671	31	3	3			3	26.2							51	19.2	3	45.4
676	32	3	3		3		7.0							22	7.1	3	14.1
681,691	33	47	46	1	47		310.0							104	75.9	47	385.9
696	34	7	7		6	1	86.7							28	5.0	7	91.7
697	35													46	11.5		11.5
692,693 718	Submidden	7	7		6	1	78.5							38	7.2	7	85.7
806,807	3	3			3		92.5							5	22.3	3	114.8
643	Column sample	3	3		3		186.6							1	1.8	3	188.4
General Level Total		181	174	7	168	13	2056.9							828	306.4	183	2374.8

APPENDIX 7 (Continued)

Field Specimen Number	Level	Fiber-tempered: Number Sherds	Plain	Decorated	Body	Rim	Weight in Grams	Grit-tempered: Number Sherds	Plain	Decorated	Body	Rim	Weight in Grams	Paste Fragments	Weight in Grams	Total Sherds	Total Weight (gms)
							□18N,0E: Ceramic Analysis-General Levels (1 Level = 5 cm)										
64	1	6	6		6		30.2	1	1		1		9.2	18	11.0	7	50.4
69	2	4	4		4		54.5	1	1		1		2.3	45	16.3	5	73.1
169	3	3	3		3		67.2							31	4.8	3	72.0
180	4	2	2		2		10.6							18	10.1	2	20.7
186	5	2	2		2		18.0							18	11.0	2	29.0
194	6	6	6		5	1	21.2							12	0.8	6	22.0
201	7	2	2		1	1	26.4							23	8.4	2	34.8
222	8	3	3		2	1	12.3							37	116.6	3	28.9
300	9	4	4		3	1	93.7							14	2.1	4	95.8
335	10	2	2		2		2.3							8	0.9	2	3.2
350	11	2	2		2		47.6							18	3.8	2	51.4
367	12	2	2		2		13.5							5	1.4	2	14.9
374	13	10	10		10		90.5							21	4.3	10	94.8
396	14	4	4		4		27.8							9	0.7	4	28.5
441	15	2	2		2		7.8							14	4.1	2	11.9
455	16	3	3		2	1	29.9							6	0.5	3	30.4
513	17	1	1		1		11.6							4	0.4	1	12.0
562	18	3	3		3		15.2							8	3.6	3	18.8
565	19	2	1	1	1		132.1							3	1.5	2	133.6
574	20													13	2.9		2.9
584	21	2	2		2		9.2							5	1.1	2	10.3
592	22													11	1.6		1.6
597	23													3	1.0		1.0

APPENDIX 7 (Continued)

Field Specimen Number	Level	Fiber-tempered: Number Sherds	Plain	Decorated	Body	Rim	Weight in Grams	Grit-tempered: Number Sherds	Plain	Decorated	Body	Rim	Weight in Grams	Paste Fragments	Weight in Grams	Total Sherds	Total Weight (gms)
								□16N,0E: Ceramic Analysis-Feature Totals and Unit Total									
307,406																	
421,522	Fea. #20	7	7		7		445.9							6	2.5	7	448.4
534,582																	
310,456																	
465,478																	
486,503	Fea. #21	4	4		4		58.1							37	2.5	4	60.6
630																	
639,647	Fea. #24	2	2		2		13.8							6	2.2	2	16.0
652	Fea. #25													8	1.8		1.8
688	Fea. #26	13	12	1	13		451.2							59	77.7	13	528.9
684	Fea. #27	32	32		31	1	249.0							26	14.8	32	263.8
Feature Total		58	58	57	1	57	1	1218.0						142	101.5	58	1319.5
General Level Total			181	174	7	168	13	2056.9	2	2		2	11.5	828	306.4	183	2374.8
Unit Total			239	231	8	225	14	3274.9	2	2		2	11.5	970	407.9	241	3694.3

APPENDIX 7 (Continued)

Field Specimen Number	Level	Fiber-tempered Number Sherds	Plain	Decorated	Body	Rim	Weight in Grams	Grit-tempered Number Sherds	Plain	Decorated	Body	Rim	Weight in Grams	Paste Fragments	Weight in Grams	Total Sherds	Total Weight (gms)
								◻18N,3E: Ceramic Analysis-General Levels (1 Level = 5 cm)									
66	1	2	2		2			3	3		3		8.1	20	7.6	5	22.4
159	2													11	1.8		1.8
172	3	1	1		1									17	17.9	1	30.8
181	4	6	6		5	1								28	34.3	6	138.3
189	5	1	1		1									23	16.5	1	21.1
203	6	2	2		2									10	1.0	2	18.4
225	7	1	1		1									5	2.8	1	6.8
312	8													18	10.9		10.9
342	9	2	2		2									5	3.3	2	36.7
390	10													19	9.7		9.7
434	11	1	1		1									12	1.3	1	32.1
447	12													2	0.4		0.4
471	13	4	4		3	1								8	2.9	4	61.2
490	14	2	2		1	1								17	10.5	2	45.8
528	15	2	2		1	1								57	10.4	2	51.1
724	16	4	4		2	2								19	1.9	4	133.5
728	17	2	2		1	1								29	13.9	2	256.8
736	18	1	1		1									13	8.7	1	179.3
740	19	3	3		3									15	3.9	3	8.7
743	20	6	6		4	2								40	13.3	6	147.5
746	21	3	1	2	2	1								25	14.3	3	133.9

APPENDIX 7 (Continued)

Field Specimen Number	Level	Fiber-tempered Number Sherds	Plain	Decorated	Body	Rim	Weight in Grams	Grit-tempered Number Sherds	Plain	Decorated	Body	Rim	Weight in Grams	Paste Fragments	Weight in Grams	Total Sherds	Total Weight (gms)
								□18N,3E: Ceramic Analysis-General Levels (1 Level = 5 cm) (Continued)									
750	22													2	0.9		0.9
754	23	2	2		2									25	5.9	2	26.2
760	24													9	1.3		1.3
764	25													10	1.3		1.3
768	26	2	1	1	2									18	4.2	2	40.2
772	27	1	1		1									21	3.0	1	5.7
776	28	4	4		4									24	9.4	4	49.2
780	29	5	5		5									11	1.3	5	69.0
799	30	1	1		1									13	3.2	1	6.5
801	31	6	5	1	5	1								44	7.6	6	67.6
803	32	3	3		3									8	1.9	3	31.9
808	South baulk	6	6		3	3										6	153.8
843	Exposed humic lense	3	3		2	1								2	1.4	3	31.8
General Level Total		76	72	4	61	15								580	228.7	79	1834.6

APPENDIX 7 (Continued)

Field Specimen Number	Level	Fiber-tempered Number Sherds	Plain	Decorated	Body	Rim	Weight in Grams	Grit-tempered Number Sherds	Plain	Decorated	Body	Rim	Weight in Grams	Paste Fragments	Weight in Grams	Total Sherds	Total Weight (gms)
							□18N,3E: Ceramic Analysis-Feature Totals and Unit Total										
162	Fea. #15	1	1		1		31.6									1	31.6
229,326																	
415,427	Fea. #18	3	3		2	1	114.6							23	3.15	3	117.75
552																	
237,321	Fea. #19	3	3		3		78.9							18	2.5	3	81.4
402,543																	
Feature Total		7	7		6	1	225.1							41	5.65	7	230.75
General Level Total		76	72	4	61	15	1605.9	3	3		3		8.1	580	228.7	79	1834.6

APPENDIX 7 (Continued)

Field Specimen Number	Level	Fiber-tempered Number Sherds	Plain	Decorated	Body	Rim	Weight in Grams	Grit-tempered Number Sherds	Plain	Decorated	Body	Rim	Weight in Grams	Paste Fragments	Weight in Grams	Total Sherds	Total Weight (gms)
9GN57 □6S,15E: Ceramic Analysis-General Levels, Feature Totals, Unit Total (1 Level = 15 cm)																	
11	1	17	16	1	17		237.4							21	74.9	17	312.3
13	2	18	16	2	13	5	289.0							12	27.7	18	316.7
16	3	10	10		10		212.3							16	13.0	10	225.3
20	4	6	6		5	1	152.2							26	28.2	6	180.4
29	5	8	8		7	1	74.1							1	1.3	8	75.4
44	6	14	14		10	4	93.1							35	36.0	14	129.1
545,793	7	45	42	3	36	9	531.0							282	163.8	45	694.8
817	8	50	36	14	37	13	1282.5							342	118.8	50	140.3
823	9	3	3		3		43.4							55	33.2	3	76.6
53,63	Profile clean.	4	3	1	4		89.3	1	1		1		2.0	9	1.9	5	93.2
General Level Total		175	154	21	142	33	3004.3	1	1		1		2.0	799	498.8	176	3505.1
18	Fea. #3	9	6	3	6	3	413.8							10	12.2	9	426.0
15	Fea. #4	6	5	1	4	2	137.9							2	3.3	6	141.2
22	Fea. #6	1	1		1		12.3									1	12.3
26	Fea. #10	2	2		2		109.9							7	10.8	2	120.7
30	Fea. #11	1	1		1		18.0									1	18.0
Feature Total		19	15	4	14	5	691.9							19	26.3	19	718.2
Unit Total		194	169	25	156	38	3696.2	1	1		1		2.0		525.1		4223.3

APPENDIX 7 (Continued)

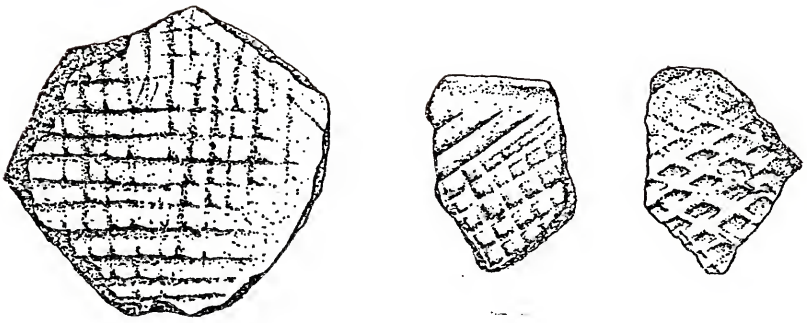
Field Specimen Number	Level	Fiber-tempered Number Sherds	Plain	Decorated	Body	Rim	Weight in Grams	Grit-tempered Number Sherds	Plain	Decorated	Body	Rim	Weight in Grams	Paste Fragments	Weight in Grams	Total Sherds	Total Weight (gms)
							9GN76 Test 1: Ceramic Analysis-Unit Total (1 Level = 15 cm)										
1	1	22	22		21	1	132.8	22	17	5	22		69.9	34	36.3	44	239.0
3	2	11	10	1	10	1	412.7							5	9.2	11	421.9
4,15	3	6	6		6		121.9							52	48.9	6	170.8
5,17	4	5	4	1	4	1	76.4							11	11.6	5	88.0
27	Zone III	1	1		1		10.9									1	10.9
61	Profile	1	1		1		31.8									1	31.8
6	Fea. #1	1	1		1		22.4							1	4.6	1	27.0
		47	45	2	44	3	808.9	22	17	5	22		69.9	103	110.6	69	989.4

APPENDIX 7 (Continued)

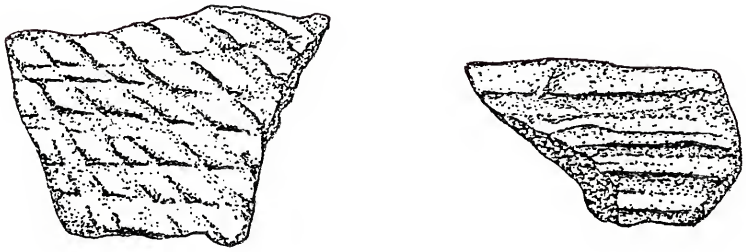
		Fiber-tempered						Grit-tempered									
Field Specimen Number	Level	Number Sherds	Plain	Decorated	Body	Rim	Weight in Grams	Number Sherds	Plain	Decorated	Body	Rim	Weight in Grams	Paste Fragments	Weight in Grams	Total Sherds	Total Weight (gms)
					9GN76 ◻55,30E: Ceramic Analysis-Unit Total (1 Level = 5 cm)												
9	1	1	1			1	34.5	2	1	1	2		2.4	30	8.6	3	45.5
22	2							1	1		1		1.1	54	25.6	1	26.7
30,33,34 35,36	3	4	4		4		23.7							33	16.4	4	40.1
43	4	1	1		1		80.0							33	25.5	1	105.5
49	5	1	1		1		3.3							21	4.6	1	7.9
55	6	1		1	1		75.4							18	6.5	1	81.9
59	7	8	7	1	6	2	117.9							15	16.2	8	134.1
62	8	13	6	7	11	2	119.7							39	25.7	13	145.4
67	9	16	13	3	10	6	232.5							93	56.4	16	288.9
72	10													14	7.5		7.5
76	11													3	0.2		0.2
80	12													4	0.5		0.5
70	Fea. #2													6	0.7		0.7
		45	33	12	34	11	687.0	3	2	1	3		3.5	363	194.4	48	884.9

APPENDIX 8

ILLUSTRATIONS: GRIT-TEMPERED DECORATED SHERDS



□42S, 24W



□33S, 12E

Figure 12: Decorated Grit-Tempered Ceramics.

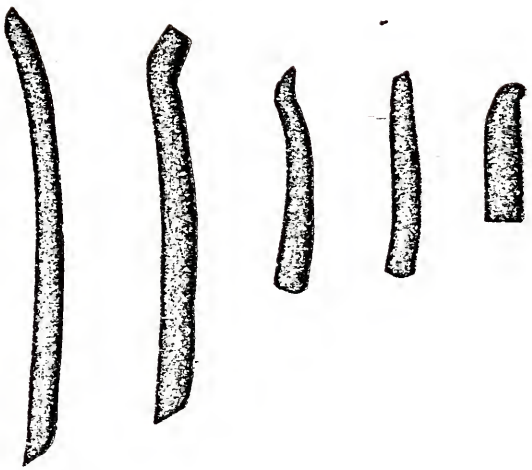


FIGURE 13. Rim Forms from Grit-Tempered Sherds.

APPENDIX 9: CATALOG OF WORKED BONE AND ANTLER

Field Specimen Number	Unit	Level	Item	Description	Weight in Grams
				9GN57	
*4	□9S,15E	1	awl	bone: articular surface partially intact, 88 x 9.2 mm	3.8 g
8	□9S,15E	2	awl	bone: 52.8 x 7.7 mm	1.8 g
13	□6S,15E	2	prong	antler: 52.6 x 7.6 mm	2.3 g
*44	□6S,15E	6	awl	bone: metapodial groove present, 2 cuts at basal end-bone sides, 75.9 x 7.8 mm	2.7 g
*169	□18N,0E	3	point	bone: constructed, snapped base, 58.7 x 7.0 mm	2.4 g
*225	□18N,3E	7	pin	bone: metapodial fragment, specimen complete, 130.3 x 11.3 mm	5.4 g
*237	□18N,3E	Fea.#19	awl	bone: raccoon fibula, needle-like, 83.6 x 4.3 mm	0.8 g
*342	□18N,3E	9	fragment	bone: zoned triangular or diamond incised motif, 36.1 x 8.1 mm	1.5 g
368	□18N,0E	12	turtle	2 pleural fragments, cancellous bone exposed	1.6 g
*390	□18N,3E	10	pin	bone: rounded, tapered base, 6 circumferentially incised basal lines, specimen complete, 146.0 x 6.9 mm	4.7 g
409	□18N,0E	Fea.#20	turtle	pleural fragment, cancellous bone exposed	0.4 g
418	□18N,0E	Fea.#20	unidentified	bone: articular and medullary surfaces smoothed	1.2 g
*421	□18N,0E	Fea.#20	pin	bone: 5 fragments, 117.1 mm length of incomplete specimen, 16 circumferential cuts	3.6 g

APPENDIX 9 (Continued)

Field Specimen Number	Unit	Level	Item	Description	Weight in Grams
				9GN57	
*434	□18N,3E	11	awl	bone: metapodial fragment, 43.8 x 7.5 mm	1.4 g
*441	□18N,0E	15	fragment	bone: zoned diamond incising, shaft fragment, 15.4 x 6.6 mm	0.5 g
452	□18N,0E	16	turtle	pleural fragment with interior scraping	0.5 g
460	□18N,0E	Fea.#21	turtle	marginal, cancellous bone exposed	1.8 g
*471	□18N,3E	13	fragment	bone: tip of point or pin	0.1 g
			*turtle	13 examples, drilled marginal, pleurals scraped	7.0 g
488	□18N,0E	Fea.#21	turtle	2 pleurals, cancellous bone exposed	2.9 g
*503	□18N,0E	Fea.#21	fragment	bone: decorated shaft fragment, zoned diamond incising	0.1 g
523	□ 6N,8E	3	prong	antler: calcined, shearing cut on side	1.3 g
*529	□ 18N,3E	15	turtle	pleural fragments, scraped interior	10.1 g
534	□18N,0E	Fea.#20	fragment	bone: shaft fragment - incised motif, 7.2 x 5.5 mm	0.2 g
			fragment	bone: tip of pin or point	0.1 g
543	□18N,3E	Fea.#19	fragment	bone: tip of pin or point, 10.2 x 3.5 mm	
545	□ 6S,15E	7	fragment	bone: large lumen bone, cut section leveled and pointed	1.5 g
551	□18N,3E	Fea.#18	turtle	cut plastron	3.6 g

APPENDIX 9 (Continued)

Field Specimen Number	Unit	Level	Item	Description	Weight in Grams
				9GN57	
*578	□18N,0E	21	fragment	bone: probable pin shaft fragment with zoned incision, broken and reused on decorated end.	2.2 g
*582	□18N,0E	Fea.#20	fragment	bone: base for pin 32.7 mm	1.1 g
*592	□18N,0E	22	awl	*bone: constricted head and posterior medial groove, highly polished, cut marks along posterior and anterior surfaces, 64.8 x 7.7 mm	1.8 g
607	□18N,0E	24	turtle	pleural fragments, cancellous bone exposed	0.4 g
617	□18N,0E	26	turtle	pleural fragment, cancellous bone exposed	2.3 g
*621	□18N,0E	27	turtle	carapace fragments, interior scraped	14.3 g
724	□18N,3E	16	fragment	bone: tip of pin or point	
728	□18N,3E	17	fragment fragment	bone: cut and polished, 14.6 x 9.8 mm bone: tip of point or pin	0.3 g
740	□18N,3E	19	fragment	bone: shaft, 16.2 mm	0.2 g
747	□18N,3E	21	turtle	pleural fragment, interior scraped	2.2 g
755	□18N,3E	23	turtle	cut plastron and bridge marginals	15.7 g
768	□18N,3E	26	fragment	bone: tip of pin or point	
*776	□18N,3E	28	pin	bone: base (Head) and shaft with incised fret-scroll design, 43.s x 11.9 mm	2.7 g

APPENDIX 9 (Continued)

Field Specimen Number	Unit	Level	Item	Description	Weight in Grams
				9GN76	
*806	□ 18N,0E	baulk	pin	bone: base and shaft, 55.2 x 14.2 mm	3.1 g
			fragment	bone: near point, highly polished	0.8 g
817	□ 6S,15E	8	fragment	bone: with curvilinear zoned incised motif	0.4 g
			pin	bone: expanded head pin of metapodial fragment, complete with no decoration, 158 x 8 mm	9.4 g
*821	□ 19.5N,2W	4	turtle	bridge marginals cut, highly polished, cancellous bone exposed	33.5 g
841	□ 19.5N,2W	2	turtle	fragment with interior scraped	1.3 g
843	□ 18N,3E	humic lense	pin	bone: shaft and point, zoned incision, 112.8 x 6.8 mm	3.8 g
			pin	bone: shaft and point, 57.5 x 5.0 mm	1.2 g
				West Ring-9GN76	
4	Test 1	3	fragment	bone: cylindrical fragments - incised lines, 20 x 5 mm	0.7 g
			fragment	bone: cylindrical cut section having tapered snapped area, interior slightly hollowed	2.3 g
15	Test 1	3	awl	bone: small mammal, 56.3 mm	0.7 g
43	□ 5S,30E	4	fragment	bone: pin or point tip fragment	
			fragment	antler: tip of prong	0.2 g
67	□5S,30E	9	fragment	bone: cylindrical plain fragment	0.3 g

APPENDIX 9 (Continued)

Field Specimen Number	Unit	Level	Item	Description	Weight in Grams
				Marsh Cultural Level	
354	□15S,6W	30-40 cm	tine	antler: cut base, 89.5 x 11.2 mm	11.4 g
358	□30S,12W	55-65 cm	awl	bone: triangular cross-section, 71.4 x 9.0 mm	4.1 g
			turtle	bridge marginals, scraped and polished (14a, 12, 101a)	8.5 g
			turtle	pleural fragments, scratched (35a, 82)	4.7 g
*701	□42S,24W	3	pin	bone: head of pin, cut marks along margin of articular surface, 50.9 x 15.4 mm	3.8 g
704	□42S,24W	4	fragment	bone: shaft fragment, 38.3 x 6 mm	1.7 g
707	□42S,24W	4	pin	bone: head of pin, 30.2 x 16.3 mm	1.9 g
			turtle	cut bridge marginals, cancellous bone exposed, highly polished	2.2 g

*Illustrated.

APPENDIX 10

ILLUSTRATIONS: WORKED BONE

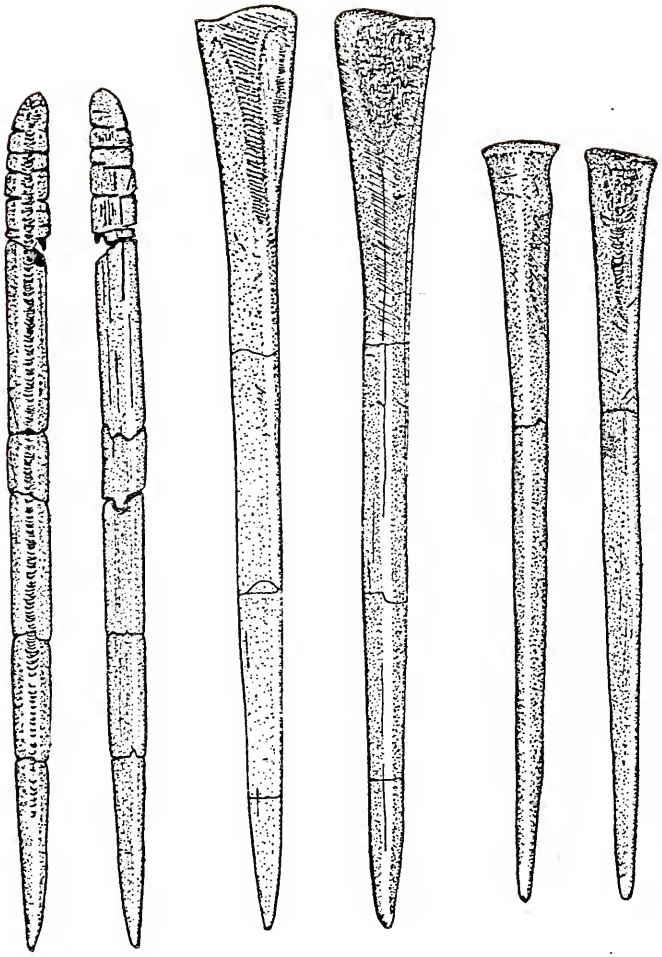


Figure 14: Worked Bone Objects

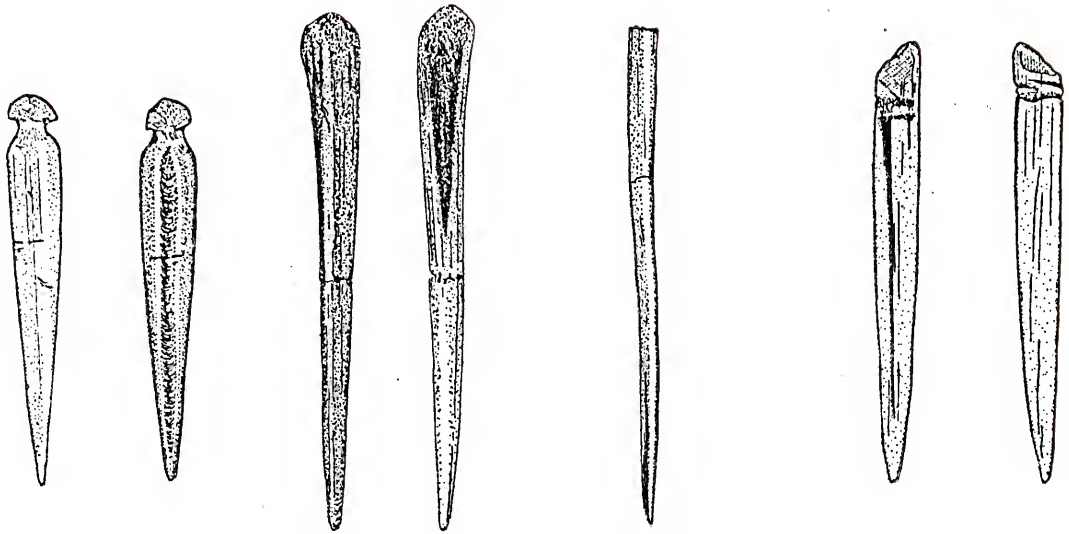
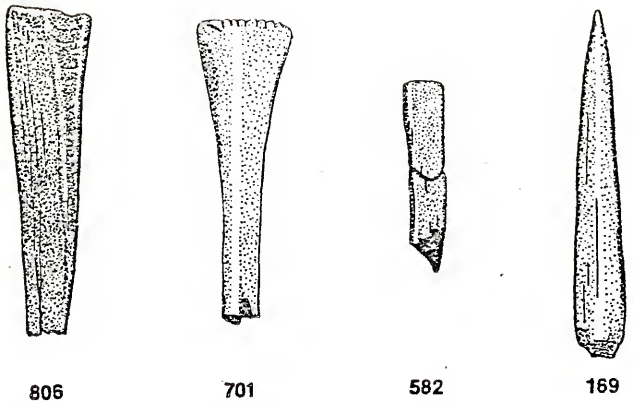


Figure 15: Worked Bone Objects



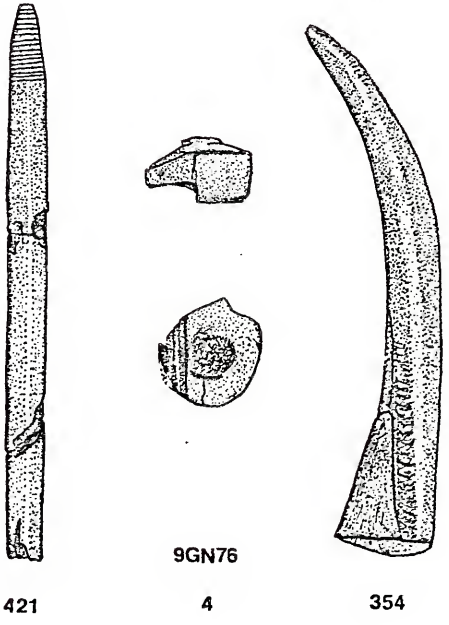


Figure 16: Worked Bone and Antler Objects

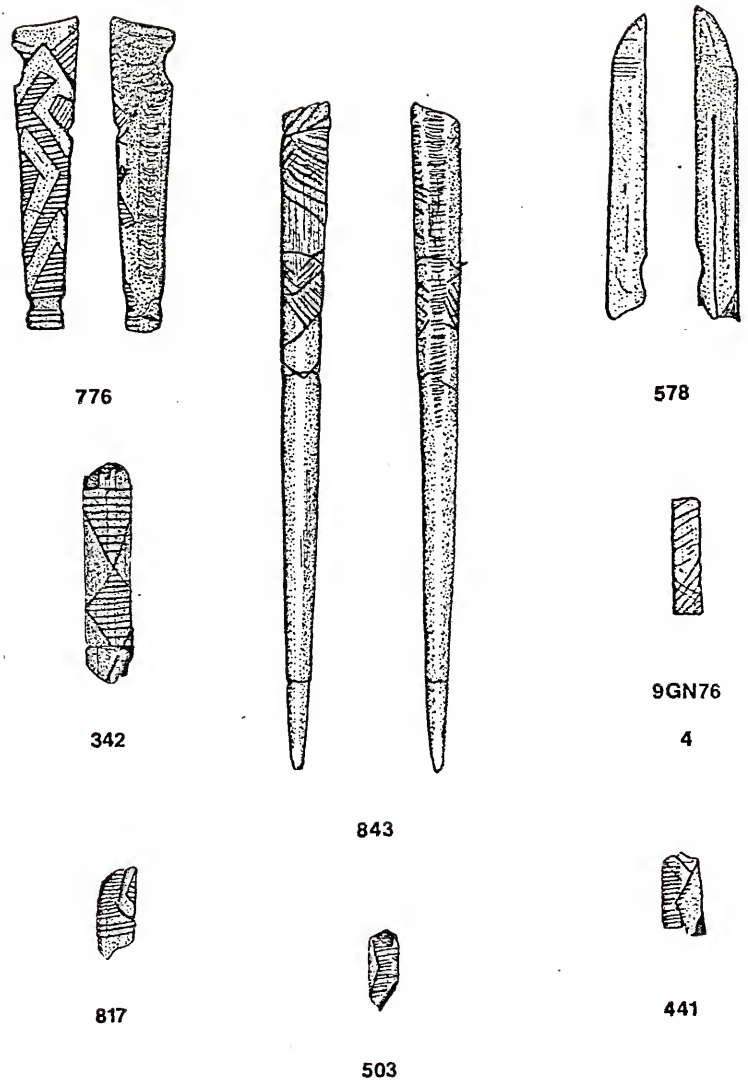
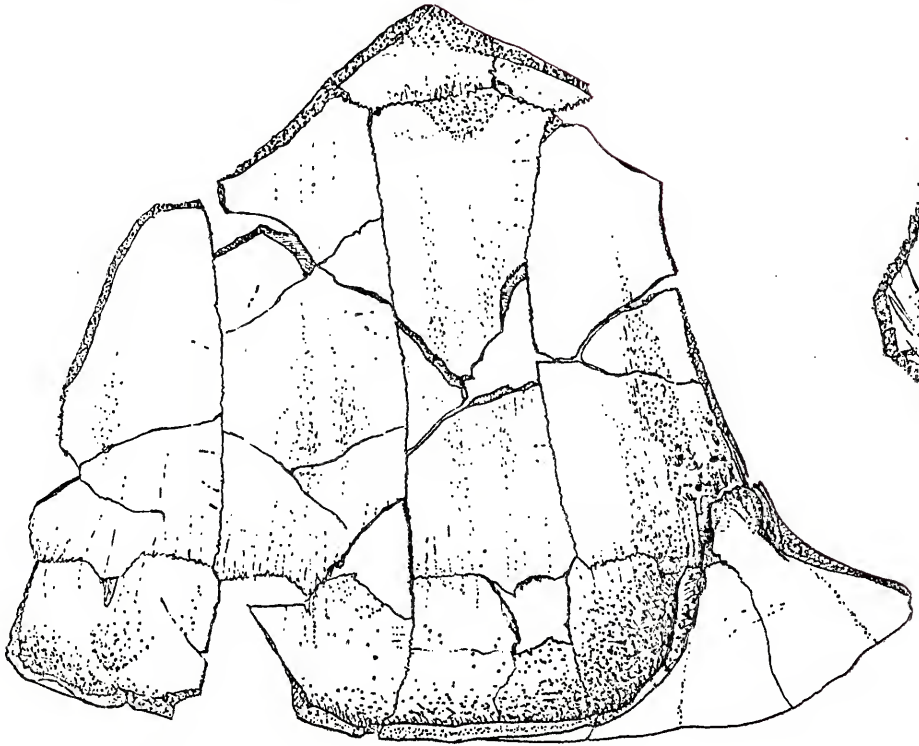


Figure 17: Decorated Bone Objects



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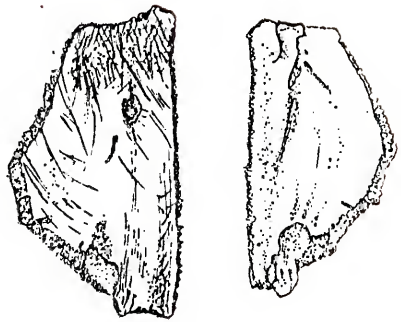

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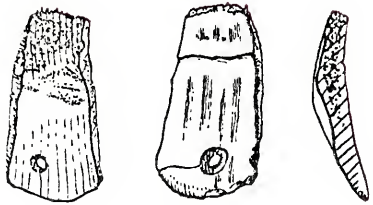
comparative
pleural

Figure 18: Examples of Worked Turtle Carapace



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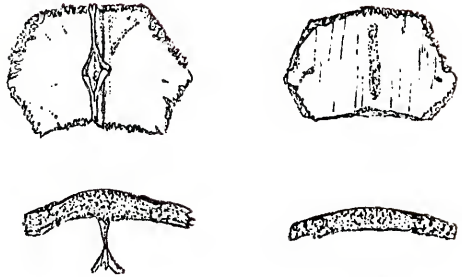

comparative neural

621

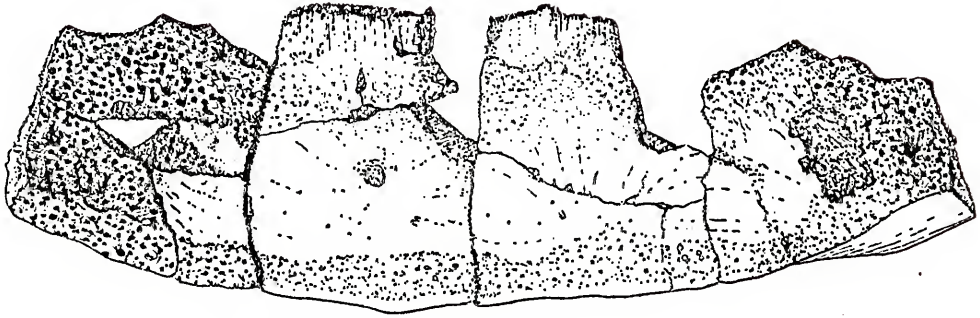

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Figure 19: Examples of Utilized Turtle Carapace

Field Specimen Number	Unit	Level	Flint	Weight	Quartz	Weight	Lithic Artifact	Weight	Description	Color	Total Weight
					Marsh Ring-(9GN57) Excavation Units						
55	□3N,15E	2			16	0.1 g					0.1 g
59	□6S,15E	Fea.#12			27	0.3 g					0.3 g
136	□30N,3E	1	1		2	0.4 g					0.4 g
175	□18N,3E	1-3			3	0.1 g					0.1 g
201	□18N,0E	7	1								
*238	□18N,3E	Fea.#19					1	185.5 g	Granitic hone	grey	185.5 g
335	□18N,3E	10			1						
374	□18N,0E	13			1						
390	□18N,3E	10			1	1.0 g					1.0 g
456	□18N,0E	Fea.#21			1						
465	□18N,0E	Fea.#21			1						
471	□18N,3E	13			2						
478	□18N,0E	Fea.#21			1						
634	□18N,0E	29			1						
652	□18N,0E	Fea.#25	1		2	0.5 g					0.5

APPENDIX II (Continued)

Field Specimen Number	Unit	Level	Flint	Weight	Quartz	Weight	Lithic Artifact	Weight	Description	Color	Total Weight
					Marsh Ring-(9GN57) Excavation Units						
669	□18N,0E	31			6	0.3 g					0.3 g
681	□18N,0E	33			11	0.5 g					0.5 g
688	□18N,0E	Fea.#26			2	0.1 g					0.1 g
693	□18N,0E	Shell #2			1						
694	□18N,0E	Shell #3			1						
696	□18N,0E	34			63	3.0 g					3.0 g
697	□18N,0E	35			109	5.7 g					5.7 g
719	□18N,0E	Grey Area			4	0.1 g					0.1 g
724	□18N,3E	16	1	0.2 g							0.2 g
743	□18N,3E	20			2						
746	□18N,3E	21			1						
764	□18N,0E	25			1						
768	□18N,3E	26			2	0.1 g					0.1 g
772	□18N,3E	27			4	0.1 g					0.1 g
776	□18N,3E	28			1						

APPENDIX II (Continued)

Field Specimen Number	Unit	Level	Flint	Weight	Quartz	Weight	Lithic Artifact	Weight	Description	Color	Total Weight
					Marsh Ring-(9GN57) Excavation Units						
793	□6S,15E	7	3	0.1 g	8	0.2 g					0.3 g
801	□18N,3E	31	4	0.1 g	45	2.2 g					2.3 g
*803	□18N,3E	32	1	0.1 g	88	4.6 g	1	22.5 g	Triangular projectile point	white	27.2 g
*817	□6S,15E	8	4	0.1 g	9	0.5 g	1	12.9 g		white	13.5 g
823	□6S,15E	9	2	0.05 g	67	3.5 g					3.55 g
		Totals	18	0.65 g	433	23.3 g	3	220.9			244.85 g
					Marsh Excavation Units						
*40	□27S,18E	60-70 cm			2	19.7 g					19.7 g
*358	□30S,12W	55-65 cm	2	0.4 g			1	19.4 g	?stemmed knife	blu/blk	19.8 g
							1		worked fragment	pk/blu	
*359	□30S,3W	60-70 cm	1		3	65.1 g	1	19.3 g	flint projectile point	blk	84.4 g
362	□15S,6W	50-60 cm	1	0.15 g			1	6.2 g	broken flint		6.35 g
373	□15S,6W	60-70 cm	2	0.55 g			1	1.5 g	worked fragment	grey	2.05 g

APPENDIX 11 (Continued)

Field Specimen Number	Unit	Level	Flint	Weight	Quartz	Weight	Lithic Artifact	Weight	Description	Color	Total Weight
					Marsh Excavation Units						
381	□ 15S,6W	70-80 cm			3	0.6 g					0.6 g
*383	□30S,12W	Sump					1	8.7 g	worked core	bluish	8.7 g
602	□45S,15E	90-100 cm			1						
703	□42S,24W	50-55 cm	2	0.5 g							0.5 g
710	□42S,24W	55-60 cm	4	2.7 g							2.7 g
782	□24S,24E	35-45 cm			1	0.2 g					0.2 g
		Totals	12	4.3 g	10	85.6 g	6	55.1 g			145.0 g
					West Ring (9GN76) Excavation Units						
5	Test 1	4	1	2.5 g							2.5 g
17	Test 1	4	2	0.2 g	1						0.2 g
15	Test 1	3			3	0.1 g					0.1 g
22	□ 5S,30E	2			1	0.7 g					0.7 g
24	Test 1	Shell #2			1						
30	□ 5S,30E	3	2	0.1 g	1						0.1 g
38	Test 1	Gen. Coll.	1	0.1 g							0.1 g

APPENDIX 11 (Continued)

Field Specimen Number	Unit	Level	Flint	Weight	Quartz	Weight	Lithic Artifact	Weight	Description	Color	Total Weight
					West Ring (9GN76) Excavation Units						
49	□ 5S,30E	5			2	0.1 g					0.1 g
55	□ 5S,30E	6	1	0.05 g	6	0.3 g					0.35 g
59	□ 5S,30E	7			4	1.0 g					1.0 g
62	□ 5S,30E	8			4	0.1 g					0.1 g
67	□ 5S,30E	9			12	0.6 g					0.6 g
72	□ 5S,30E	10			7	0.3 g					0.3 g
76	□ 5S,30E	11			4	0.3 g					0.3 g
80	□ 5S,30E	12			3	0.1 g					0.1 g
		Totals	7	2.95 g	49	3.6 g					6.55 g

*Illustrated.

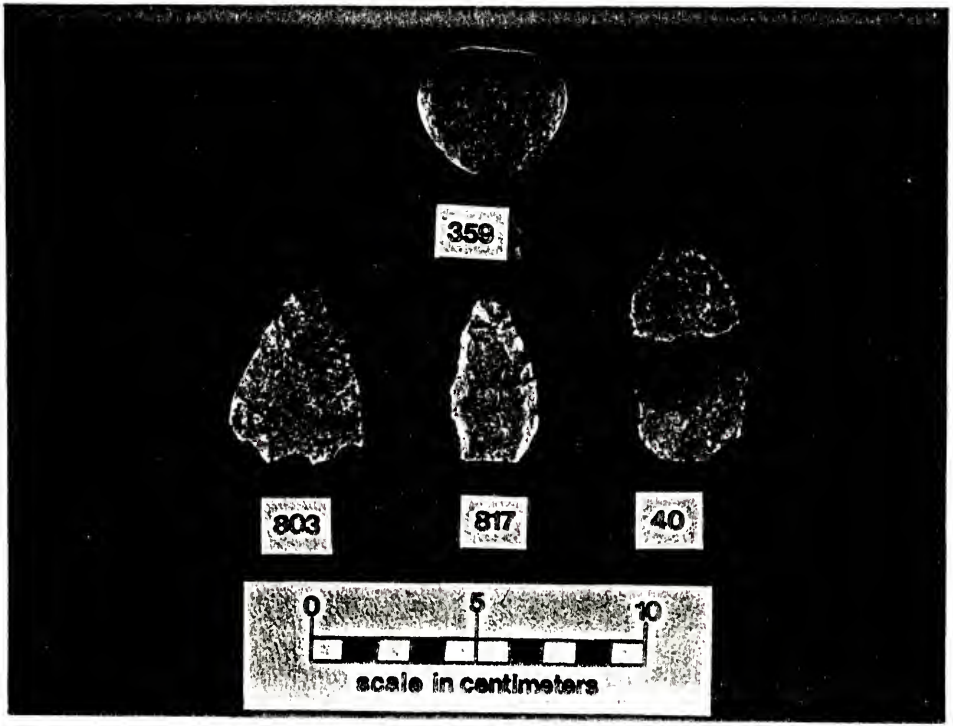

Figure 20: Recovered Lithic Material

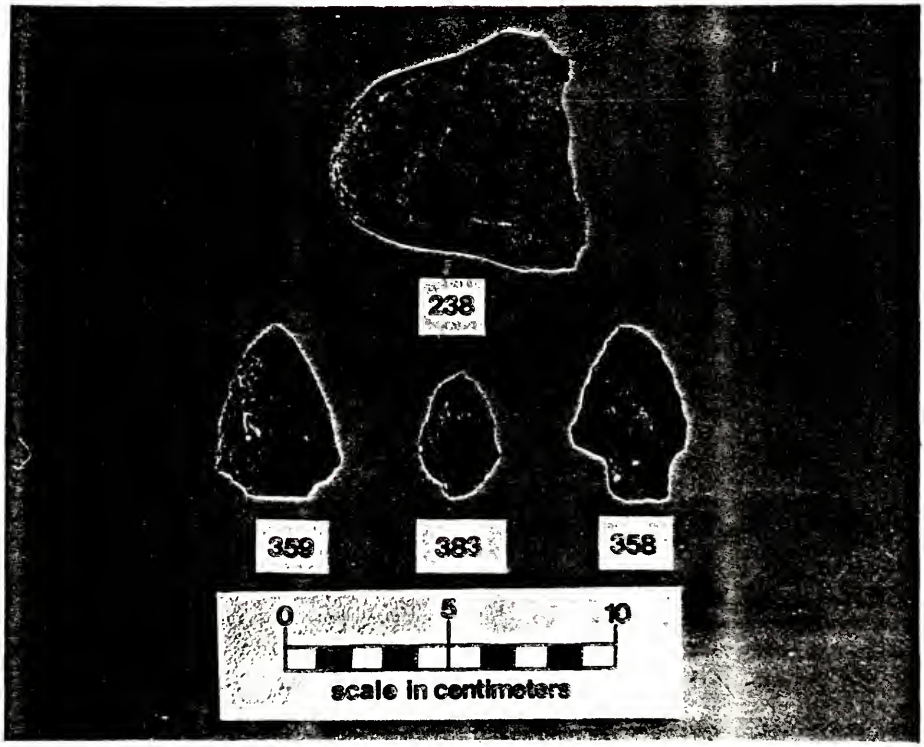

Figure 21: Recovered Lithic Material

APPENDIX 12: CATALOG OF UTILIZED SHELL

Field Specimen Number	Unit	Level	Item	Description	Probable Use
				Marsh Ring-9GN57	
4	◻9S,15E	1	Busycon 1	peripheral area and knob row have hole, lip absent	food item
4	◻9S,15E	1	Busycon 2	spire absent, lip worn	undetermined
4	◻9S,15E	1	Busycon 3	knobs worn	undetermined
9	◻9S,15E	2	*Busycon 1	basal blunting, lip cut back to second knob and round hole in shoulder, 125 x 90 mm	tool
11	◻6S,15E	1	Busycon 2	dorsal hole in peripheral area; 167 x 115 mm	tool
11	◻6S,15E	1	Busycon 3	basal tapering and blunting; 138 x 80 mm	tool
11	◻6S,15E	1	*Busycon 1	basal blunting, hole in dorsal peripheral area; 118 x 94 mm	tool
11	◻6S,15E	1	*Busycon 4	basal tapering and wear; lip edge wear 109 x 94 mm	tool
11	◻6S,15E	1	Busycon 5	basal blunting, circular hole in right dorsum; 90 x 68 mm	tool
11	◻6S,15E	1	2 cut fragments	possible edge wear on one of the fragments	undetermined
16	◻6S,15E	3	Busycon	cut section, no wear observed	food item

APPENDIX 12 (Continued)

Field Specimen Number	Unit	Level	Item	Description	Probable Use
20	□6S,15E	4	Busycon	basal tapering and wear; 115.4 x 84.8 mm	tool
51	□ 9S,15E	3	Busycon	peripheral holes, basal blunting; 106.6 x 94.3 mm	tool
68	□ 18N,0E	2	*7 Busycons	all specimens have holes in the peripheral area; one shows some wear at the spire.	food items
169	□ 18N,0E	3	3 Busycons	two specimens have holes in peripheral	2 food items, 1 undet.
180	□ 18N,0E	4	*Oyster	cut (circular) 20.5 mm diameter	
186	□ 18N,0E		*Undetermined	flat disk, apparently drilled from both sides bead; 8.5 mm., 0.3 g outer diameter, inner diameter 3.0 mm	
301	□ 18N,0E	9	Busycon #17	no alteration noted	food item
375	□ 18N,0E	13	Busycon	columella and spire intact having adhering immature oysters	undetermined
451	□ 18N,0E	e. baulk	Busycon #22	lip edge wear, basal blunting, knobs worn; spire absent, area worn smooth; 105.4 x 87.7 mm	tool
528	□ 18N,3E	15	*Busycon #8	lip edge wear, basal blunting; 123.6 x approximately 99.4 mm	tool

APPENDIX 12 (Continued

Field Specimen Number	Unit	Level	Item	Description	Probable Use
				Marsh Ring-9GN57	
568	□18N,0E	19	*Busycon	removal of peripheral area and knobs with edge wear; adhering immature oysters. Question of prior tool use and discard into water with subsequent regathering of specimen.	tool tool
582	□18N,0E	Fea. #20	Busycon #25	basal blunting and wear of two knobs; 111.1 x 88.6 mm	tool
593	□18N,0E	23	Busycon	basal blunting	tool
610	□18N,0E	25	Busycon	no alteration noted	food item
635	□18N,0E	29	Busycon	no alteration noted	food item
662	□18N,0E	30	Busycon	large peripheral segment absent	tool
672	□18N,0E	31	Busycon	no alteration noted	food item
673	□18N,0E	32	Busycon #28	lip wear noted	tool
687	□18N,0E	Fea. #26	3 Busycons	no alteration noted; one specimen had hole in peripheral otherwise	food items
740	□18N,3E	19	Neritina reclivata	shell has been worn down on one side (no perforation)	uncertain

APPENDIX 12 (Continued)

Field Specimen Number	Unit	Level	Item	Description	Probable Use
				West Ring-9GN76	
3	Test 1	2	Busycon	1 specimen having blunted base and basal edge wear;	tool
				3 specimens with holes in peripherals; spire and knobs absent on one specimen	food
4	Test 1	3	Busycon	1 specimen with hole in knob and peripheral area	food
11	□ 5S,30E	1	Busycon #1	columella and spire intact, no basal blunting but peripheral area cut away	food
			Busycon #2	shoulder cut away exposing columella and interior of spire	food
16	□ 5S,30E	2	Busycon	small hole in knob shoulder; no other modification	food
19	Test 1	4	Busycon #7	columella having oysters adhering to interior; 98.6 mm length	uncertain
			Busycon	blunted base with spire removed; 97.1 x 85.3 mm	tool
			Clam	umbo removed; edge shows wear; bowl-shaped. Lip side not worn as much as umbo side.	tool
21	□ 5S,30E	2	Busycon	small specimen with hole in shoulder	food

APPENDIX 12 (Continued)

Field Specimen Number	Unit	Level	Item	Description	Probable Use
				West Ring-9GN76	
31	□ 5S,30E	3	Busycon #3	hole in shoulder	food
			Busycon #4	no modification	uncertain
			Busycon #5	no modification	uncertain
			Busycon #6	oyster growth noted interior; no modification	uncertain
44	□ 5S,30E	4	Busycon	columella exposed; umbilucus is sharp but no wear seen	uncertain
53	□ 5S,30E	6	Busycon #8	ventral peripheral hole; no other modification	food
			Busycon #9	large rectilinear hole in dorsum; round hole in dorsal shoulder; lip edge wear and basal blunting. May have been hafted; 151 x 126 mm	tool
60	□ 5S,30E	7	Busycon #10	shoulder peripheral area completely absent exposing columella; some lip edge wear but no modification	food
61	Test 1	profile	Busycon	large portion of peripheral absent; no other modification	food
65	□ 5S,30E	8	Busycon #11	no alteration apparent	food
66	□ 5S,30E	9	Busycon #12	knob removal and basal blunting; 141 x 103.2 mm	tool

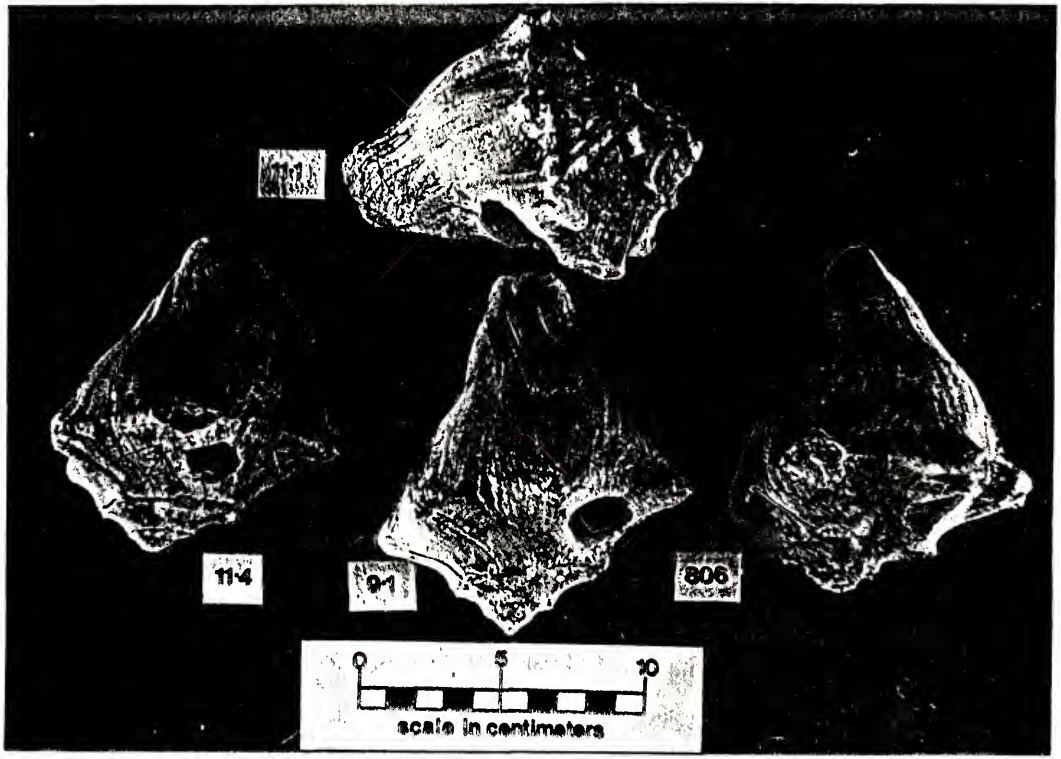

Figure 22: Recovered Shell Tools

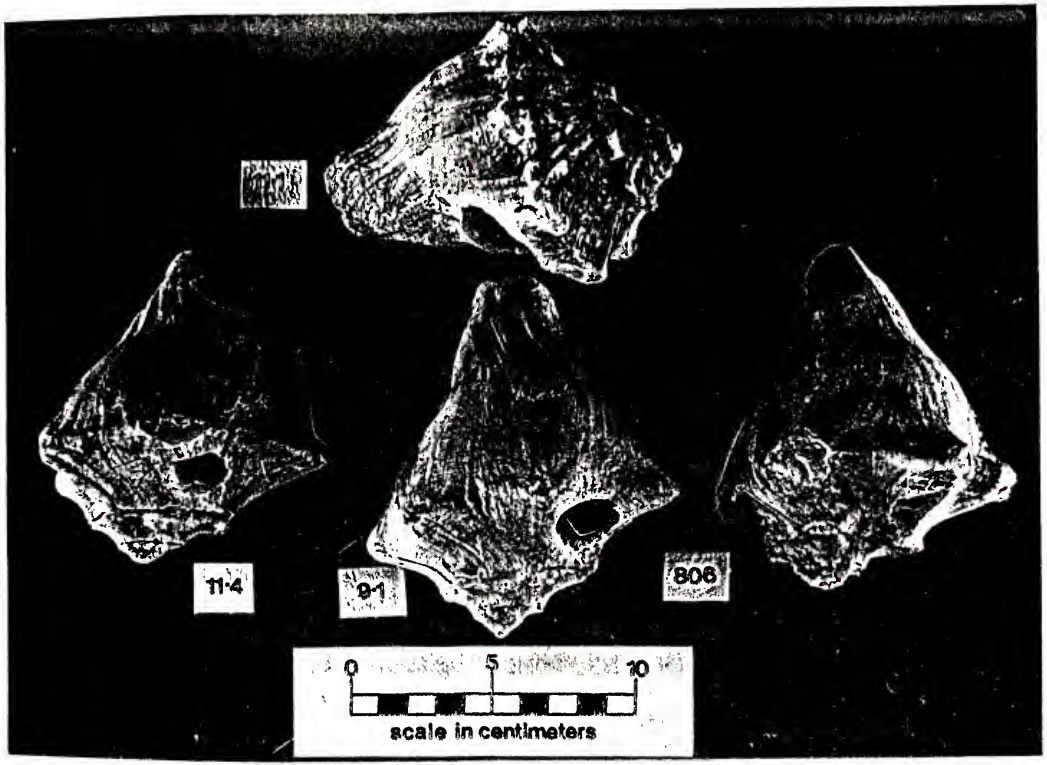

Figure 23: Recovered Shell Tools

Figure 24: Utilized Shell

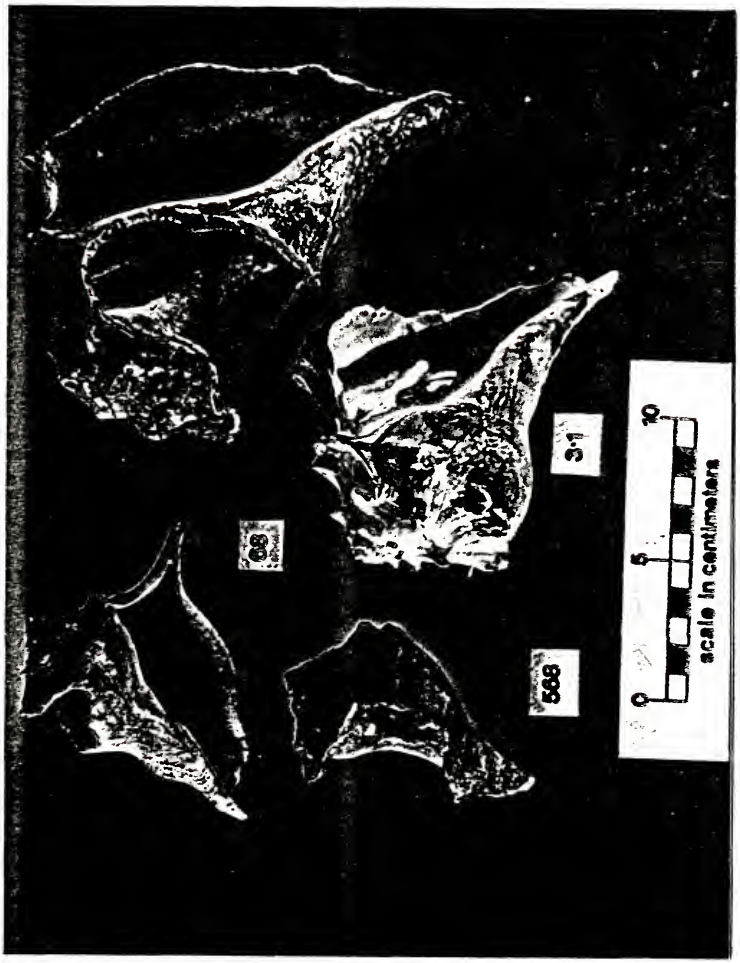

Figure 25: Miscellaneous Shell Objects

APPENDIX 13: FLORAL DISTRIBUTION BY LEVEL, 9GN76

Field Specimen #	Unit	Level	*Carya* spp.	*Celtis* spp.[1]	*Quercus* spp.	*Vitus* spp.	*Juniperus* spp.	*Forestiera* spp.	Unidentified
10	□5S,30E	1	9 1.0 g	1-2-0 0.1 g	2 0.1 g				0.6 g
14	Test 1	3	33 2.7 g	0-1-1	1				2.1 g
18	Test 1	4	19 1.4 g		2 0.1 g				0.3 g
20	□5S,30E	2	12 0.8 g	1-4-0 0.1 g		2 0.05 g			1.5 g
24	Test 1	Shell #2	2 0.1 g		1				0.1 g
27	Test 1	Zone 3	4 3.1 g						2.0 g
29	□5S,30E	3	43 3.3 g	0-3-0	2 0.1 g				1.9 g
41	□5S,30E	4	22 1.4 g						0.5 g

APPENDIX 13 (Continued)

Field Specimen #	Unit	Level	Carya spp.	Celtis spp.	Quercus spp.	Vitus spp.	Juniperus spp.	Foresteiera spp.	Unidentified
48	□ 5S,30E	5	65 3.9 g	1-24-20 0.4 g		9 0.1 g		1	4.3 g
54	□ 5S,30E	6	125 7.7	4-36-41 0.8 g	1	1			6.5 g
57	□ 5S,30E	7	63 2.7 g	6-63-70 1.2	1				4.1 g
64	□ 5S,30E	8	105 6.2 g	1-8-1 0.2 g	5 0.2 g				9.4 g
69	□ 5S,30E	9	168 9.4 g	0-11-7 0.2 g	9 0.3 g				6.4 g
70	□ 5S,30E	Fea. #2	22 1.4 g						0.5 g
74	□ 5S,30E	10	14 0.5 g						2.0 g
78	□ 5S,30E	11	13 0.3 g						1.5 g
79	□ 5S,30E	12	3	0-0-6					1.0 g

[1]first number = whole specimens, second number = half specimens, third number = fragments.

APPENDIX 14: LIST OF SCIENTIFIC/COMMON FAUNAL NAMES

Decapoda	crabs
Callinectes sp.	blue crab
Menippes sp.	stone crab
Chondrichthys	cartilaginous fishes
Carcharhinidae	requiem sharks
Galeocerdo cuvieri	tiger shark
Sphyrnidae	hammerhead sharks
Sphyrna sp.	bonnethead shark
Rajiformes	skates and rays
Mylobatoidea	rays
Dasyatis sp.	sting ray
Aetobates narinari	spotted eagle ray
Osteichthys	bony fishes
Acipenser sp.	sturgeon
Lepisosteus sp.	gar
Amia calva	bowfin
Elops saurus	ladyfish
Clupeidae	herrings
Brevoortia sp.	menhaden
Siluriformes	catfishes
Ictaluridae	freshwater catfishes
Ictalurus sp.	freshwater catfish
Ariidae	sea catfishes
Arius felis	sea catfish
Bagre marinus	gafftopsail catfish
Opsanus sp.	toadfish
Carangidae	jacks and pompanos
Sparidae	porgies
Lagodon sp.	pinfish
Sciaenidae	drums
Bairdiella chrysura	silver perch
Cynoscion sp.	sea trout
Leiostomus xanthurus	spot
Menticirrhus americanus	southern kingfish
Micropogon undulatus	Atlantic croaker
Pogonias cromis	black drum
Sciaenops ocellata	redfish or red drum
Stellifer lanceolatus	star drum
Mugil sp.	mullet
Prionotus sp.	sea robins
Paralichthys sp.	flounders

APPENDIX 14 - continued

Amphibia	amphibians
Rana sp.	frog
Siren sp.	eel
Reptilia	alligators, turtles, snakes
Alligator mississipiensis	slligator
Chelydra serpentina	snapping turtle
Kinosternon sp.	mud turtle
Terrapene carolina	Eastern box turtle
Malaclemys terrapin	diamondback terrapin
Chrysemys sp.	cooters and sliders
Chrysemys cf. *floridana*	Florida cooter
Deirochelys reticularia	chicken turtle
Gopherus polyphemus	gopher tortoise
Caretta caretta	Atlantic loggerhead turtle
Iguanidae	anoles and lizards
Anolis carolinensis	green anole (chameleon)
Natrix sp.	water snake
Coluber constrictor	black racer
Drymarchon corais	indigo
Lampropeltis sp.	kingsnake
Agkistrodon sp.	copperhead
Aves	birds
Phalacocorax auritus auritus	double crested cormorant
Ardea herodias wardi	great blue heron
Butorides virescens	green heron
Ibis sp.	ibis
Anas sp.	surface feeding duck
Bucephalus clangula	American golden eye
Buteo lineatus alleni	red shouldered hawk
Meleagris gallapavo	turkey
Rallidae	rails and gallinules
Larus argenticus	herring gull
Mammalia	mammals
Didelphis virginiana	opossum
Soricidae	shrews
Cryptotis parva	least shrew
Blarina brevicauda	short-tailed shrew
Scalopus aquaticus	Eastern mole
Sylvilagus sp.	rabbit
Glaucomys volans	flying squirrel
Sciurus carolinensis	Eastern Gray squirrel

APPENDIX 14 - continued

Rodentia	rodents
Neofiber alleni	Florida water rat
Neotoma floridana	Eastern wood rat
Oryzomys sp.	rice rat
Peromyscus sp.	white-footed and pygmy mice
Sigmodon hispidus	hispid cotton rat
Tursiops truncatus	bottle-nosed dolphin
Canis familiaris	domestic dog
Procyon lotor	raccoon
Lutra canadensis	river otter
Mustela vison	mink
Odocoileus virginianus	white-tailed deer
Homo sapiens	human

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I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Charles H. Fairbanks, Chairman
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I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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